

Rethinking public policy in agriculture

Lessons from distant and recent history



VISIT...

LANZAROTE
Caliente.COM

Rethinking public policy in agriculture

Lessons from distant and recent history

Consolidated by
Ha-Joon Chang
Faculty of Economics
University of Cambridge

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

The views expressed in this information product are those of the author and do not necessarily reflect the views of FAO.

ISBN 978-92-5-106437-5

All rights reserved. Reproduction and dissemination of material in this information product for educational or other non-commercial purposes are authorized without any prior written permission from the copyright holders provided the source is fully acknowledged. Reproduction of material in this information product for resale or other commercial purposes is prohibited without written permission of the copyright holders. Applications for such permission should be addressed to:

Chief

Electronic Publishing Policy and Support Branch

Communication Division

FAO

Viale delle Terme di Caracalla, 00153 Rome, Italy

or by e-mail to:

copyright@fao.org

FOREWORD

Many of the agricultural development policies and institutional frameworks adopted by developing countries during most of the last 20 years followed the so-called “Washington Consensus”, referred to in this report as the new conventional wisdom (NCW). This approach emphasized the role of market forces in the economy as the main mechanism for resource allocation and viewed public-sector intervention as having had price-distorting effects that bred inefficiency and stifled growth. The NCW policies, which were mainly prescribed by the World Bank and the International Monetary Fund (IMF), supported stabilization policies and Structural Adjustment Programmes (SAP) and advocated for radical reforms in agriculture that were centred on privatizing production and delivery of services and restricting governments to legislative and regulatory roles and delivering core public-sector goods and services. A key feature of these policies was that they were often prescribed and replicated across the board without due consideration to the realities of individual countries.

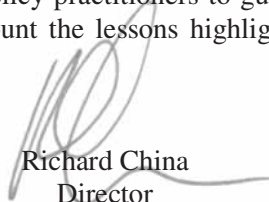
However, compared with the policies of the immediate post-colonial period (roughly from the 1950s through the mid-1970s), the NCW had generally performed poorly, resulting in slowed economic growth, rising inequality and increased poverty. In contrast, some developing countries in Asia and Latin America that followed more calibrated and sequential approaches to economic liberalization have had better results. This has raised questions about the appropriateness of NCW policies and has reignited debate on the relative roles of the public and private sectors, especially in the context of developing countries.

In this report, which is supported by case studies from ten countries, FAO tries to make a case for the complementarity between targeted public-sector interventions and private sector roles. The report provides a wide range of examples of good and bad policy choices and highlights three important lessons. First, in all countries that are now developed, governments played an important role in supporting agriculture at the early stages of economic development by participating in price stabilization and provision of inputs such as seeds and fertilizer. This support was maintained for a long time and it is still maintained in some cases. The same strategy was successfully employed by countries such as Chile and India more recently.

Second, it is evident that a “one-size-fits-all” policy in agriculture often has had disastrous results. The wide array and mix of policy options adopted by countries clearly underlines the importance of taking a pragmatic approach rather than getting locked into pro-state or pro-private-sector ideological viewpoints.

Finally, agriculture thrives best when there is continuity in policy and public-sector support. In the early stages of economic development, state subventions are often justifiable to ensure price stability, food availability and affordability and, ultimately, political stability which are required for long-term investment and development.

FAO hopes that this paper will help policy practitioners to guide the formulation of agricultural development policies, taking into account the lessons highlighted, especially in addressing the needs of the poor.



Richard China
Director

Policy Assistance and Resource Mobilization Division

EXECUTIVE SUMMARY

This report on a study by the Food and Agriculture Organization of the United Nations (FAO) on “Applying Historical Precedent to New Conventional Wisdom on Public Sector Roles in Agriculture and Rural Development”, synthesizes the reviews of the history of agricultural policy in ten of today’s developed countries (Canada, Denmark, France, Germany, Japan, Republic of Korea, the Netherlands, Norway, Sweden and the United States of America) and in ten developing and transition economies (Chile, Egypt, Ethiopia, Ghana, Hungary, India, Mexico, Ukraine, Viet Nam and Zambia). It draws lessons for today’s developing and transition countries that go beyond the so-called Washington Consensus, or what is called the new conventional wisdom (NCW) in this report.

The report provides a review of the evolution of agricultural policy in the post-World War II period. In addition to the brief historical review of the rise of neo-liberal economic thinking, the report discusses two key policy proposals behind the neo-liberal view on the role of public policy in agriculture – the elimination of distortions (ostensibly caused by government intervention) and the abandonment of national food security as a policy goal. Concerning the first proposal, the study concludes that certain distortions might be beneficial for various reasons (including the need to create short-term distortions in order to improve long-term productivity and to correct market failures). With regard to the second proposal, it is argued that national food security is a totally defensible economic policy goal when a country is at a low level of economic development (and is therefore exposed to greater risks of long-term food shortages due to low productivity) and/or when their staple foods have limited tradability.

The third section of the report provides justifications for drawing lessons from history by showing how agriculture played very similar roles in the currently rich countries in the late nineteenth and early twentieth centuries. In the late nineteenth century, the conditions for agriculture in the currently rich countries were similar to those found in today’s poorest developing countries. Even after a few decades of (what then was) rapid industrial development, their conditions in the early twentieth century were similar to what we find in some of the poor developing economies today. From the 1930s to the 1950s, the conditions in the then poorer of today’s rich countries, such as Japan and Sweden, were still in the range of Pakistan and Guatemala today. The report argues that the historical comparison is not as misplaced as it might at first seem. This notwithstanding, a discussion of the difficulties involved in drawing lessons from history is also presented.

The main section of the report documents in great detail a large number of agricultural policies that have been used in the past – not just in today’s developing and transition countries in the last 60 years, but also in today’s rich countries in the late nineteenth and early twentieth centuries. The section is divided into two main subsections – inputs policy and outputs policy. In the inputs policy section, the report discusses land policy (land tenure reform and land quality improvement), knowledge policy (research, extension, education and information), credit policy (specialized banks and agricultural credit cooperatives) and physical inputs policy (irrigation, transport, electricity and divisible inputs such as fertilizers, seeds and farm machinery). In the outputs policy section, the report covers the measures intended to increase farm income stability (price stabilization measures, insurance and trade protection) and the measures intended to improve agricultural marketing and processing.

The report concludes with the following lessons:

- In thinking about how to improve agricultural policy in developing and transition economies, there is a lot to be learned from history, especially from the history of the rich countries. There is a surprisingly high degree of similarity in the role that agriculture has played in these countries and therefore in the relevant policies they have used.
- History shows that many successful policy interventions go well beyond (or sometimes even against) the scope recommended by the NCW. Therefore, the contents of the agricultural policy toolbox for today's developing countries will be significantly enriched if history is taken more seriously. History frees our "policy imagination" in the sense that it shows us that the range of policies and institutions that have produced positive outcomes for agricultural development has been much wider than any particular ideological position – be it the pre-1980s statist one or the pro-market NCW – would admit.
- The exact institutional forms that have successfully (or unsuccessfully, for that matter) delivered critical needs of the agricultural sector vary enormously across time and space. There were successes and failures with all forms of delivery in all sorts of countries – public provision, private provision, private delivery subsidized by the state, public-private partnerships, cooperatives, state-cooperative partnerships and so on. All these examples suggest the importance of a pragmatic approach, not bound by pro-state or pro-private-sector ideologies. Indeed, one important common characteristic of success stories is their willingness to pick solutions that do not neatly fit into ideological boxes.
- It is important for countries to actively import and adapt policy and institutional innovations and to create ones of their own. Throughout distant and more recent history, successful countries have learned from others' success stories and have experimented with new policies and institutions – there were international transfers of programmes and approaches in agricultural research, extension services, cooperatives, rural credit and agricultural insurance.

A summarized version of seven of the ten country case studies are included as an annex to highlight the varied typology of agricultural development policies adopted by countries in different stages of economic development. These include a good performer (Chile), two mixed performers (India and Mexico), two suboptimal performers (Ethiopia and Zambia) and two transition economies (Hungary and Ukraine).

ACKNOWLEDGEMENT

The author wishes to thank Neela Gangadharan, Mafa Chipeta and Carlos Santana of FAO for their guidance and help in formulating the project and developing it. Acknowledgement is also due to Dirk Bezemer, Arabella Fraser, Duncan Green, Claire Melamed, and James Putzel for their helpful comments on earlier drafts of the report. Deborah Johnston, Niek Koning, and Carlos Oya provided detailed and enlightening comments, not all of which could be incorporated into the final version of the report. The author also benefited greatly from the comments made by the participants at the project workshop held in Addis Ababa, Ethiopia, on 23 October 2008. Rebecca Buchholz provided excellent research assistance at an early stage of the project. The able research assistance of Luba Fakhruddinova and Francesca Reinhardt is also greatly appreciated.

Finally, thanks go to Chimimba D. Phiri for guiding the latter part of the work, Messrs Vijay Vyas for preparing summaries of the seven country case studies in the annex, Brett Shapiro for his editorial work, Weldeghaber Kidane for finalizing the document for publication, and Ana Maria Galván for formatting it.

TABLE OF CONTENTS

Foreword	iii
Executive Summary	iv
Acknowledgement	vi
List of acronyms	ix
1 Introduction	1
2 The Evolution of Agricultural Policy in the Post-World War II Period.....	3
2.1 Eliminating “Distortions”	5
2.2 Abandoning the “Misguided Concern for National Food Self-sufficiency”	6
3 Lessons from History	8
4 Policy Lessons from Distant and Recent History	13
4.1 Inputs Policy.....	13
4.1.1 Land policy: land tenure reform and land quality improvement.....	13
4.1.2 Knowledge: research, extension, education and information.....	19
4.1.3 Credit.....	29
4.1.4 Physical inputs.....	35
4.2 Outputs Policy	41
4.2.1 Measures to increase farm income stability	41
4.2.2 Measures to improve marketing and processing	48
5 Conclusions	53
References.....	56
ANNEX 1: PROFILE OF CHILE	61
1. Setting.....	61
2. Macro Policies and their Impact.....	61
3. Agricultural Policies.....	62
4. Organizational and Programmatic Interventions.....	64
5. Lessons Learned	65
ANNEX 2: PROFILE OF ETHIOPIA.....	67
1. Key Features of the Country.....	67
2. Policies and Strategies under the Imperial Regime (1930-1974)	67
3. Policies and Strategies under the Military Government (1974-1991)	68
4. Policies and Strategies in the Post-reform Period (1991 to present)	68
5. Major Impacts.....	70
6. Lessons Learned	70
ANNEX 3: PROFILE OF HUNGARY	71
1. Soviet-style Agricultural Policies (1945-1967)	71
2. The New Economic Mechanism (1968-1989)	71
3. Transition from a Centrally Planned to a Market Economy (1990-2004).....	72
4. EU Membership Period (2004-2005)	74
5. Conclusions	74
6. Lessons Learned	75
ANNEX 4: PROFILE OF INDIA.....	76
1. Main Features of India’s Agricultural Sectors.....	76
2. Period Preceding the Green Revolution	76

3.	The Green Revolution and After	77
4.	Economic Reforms Period.....	78
5.	Reforms in Agriculture	78
6.	Current Phase of Economic Reforms	79
7.	Lessons Learned	80
ANNEX 5: PROFILE OF MEXICO		81
1.	Setting.....	81
2.	The Stabilization Phase (1958-1973)	81
3.	Period of Rapid Foreign Indebtedness (1973-1982)	82
4.	Foreign Exchange Crisis (1982-1994).....	82
5.	Agriculture and Rural Development in Recent Years (1974-2006).....	82
6.	Conclusions and Lessons Learned.....	84
ANNEX 6: PROFILE OF UKRAINE		86
1.	Soviet Period	86
2.	First Phase of Agricultural Reforms (1991-1999).....	87
3.	Second Phase of Agricultural Reforms (2000-2007).....	87
4.	Agricultural Performance during the Two Reform Phases.....	88
5.	Conclusions	90
6.	Lessons Learned	90
ANNEX 7: PROFILE OF ZAMBIA		92
1.	Agriculture in Zambia	92
2.	Evolution of Development Policies and Institutions	92
3.	Evolution of Agricultural Policies	94
4.	Causes and Consequences of Low Agricultural Performance.....	94
5.	The Role of the Public and Private Sectors in Agriculture.....	95
6.	The Role of Donors	96
7.	Lessons Learned	96
<u>List of Tables</u>		
Table 1:	Share of agriculture in total employment.....	10
Table 2:	Share of agriculture in total output	11
<u>List of boxes</u>		
Box 1:	Distribution of public land in the United States	14
Box 2:	Chilean land reform	15
Box 3:	East Asian land reform	17
Box 4:	Land degradation in Ethiopia	18
Box 5:	Agricultural research in North America	21
Box 6:	Agricultural research in India	23
Box 7:	Agricultural research and extension in Japan	25
Box 8:	Extension services for agricultural export sectors in Ghana	26
Box 9:	The rural credit system in the United States.....	31
Box 10:	Zambia's struggle to develop the rural credit system.....	32
Box 11:	A brief history of cooperatives	34
Box 12:	The Chilean price bands system	44
Box 13:	Contract farming in Zambia	51

LIST OF ACRONYMS

AES	Agricultural Experiment Station
AgSSIP	Agricultural Services Subsector Investment Programme
ASIP	Agricultural Sector Investment Programme
CAP	Common Agricultural Programme
CIMMYT	International Maize and Wheat Improvement Centre (Centro Internacional de Mejoramiento de Maíz y Trigo)
COPAGRO	Grain Producers Confederation (Confederación de Productores de Granos)
CORA	Corporación de la Reforma Agraria
COTRISA	Comercializadora de Trigo SA
ERP	Economic Reform Programme
FAO	Food and Agriculture Organization of the United Nations
FCIC	Federal Crop Insurance Corporation
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
HEII	Horticulture Exports Industry Initiative
HYV	High-yielding varieties
IMF	International Monetary Fund
INIA	Instituto Nacional de Investigaciones Agropecuarias (National Institute of Agricultural Research).
INDAP	Instituto Nacional de Desarrollo Agropecuario (National Institute of Agricultural Development)
IRRI	International Rice Research Institute
MFI	Microfinance institution
MSP	Minimum support price
NAFTA	North American Free Trade Agreement
NAMB	National Agricultural Marketing Board
NCW	New conventional wisdom
NERP	New Economic Reforms Programme
NGO	Non-governmental organization
OECD	Organisation for Economic Co-operation and Development
PA	Peasant Associations
R&D	Research and development
SAPs	Structural Adjustment Programmes
SLM	Sustainable land management
USDA	United States Department of Agriculture
WDR	World Development Report
WTO	World Trade Organization

1

INTRODUCTION

It is acknowledged that agricultural development fuels economic growth and is crucial to poverty alleviation and food security. However, in the last 25 years or so, the agricultural sector experienced relatively sluggish development in a number of developing economies. In the mid-2000s, rapidly rising food prices raised concerns about food security for many rural and urban people, particularly in developing countries. Although food prices have generally fallen since mid 2008 because due to the global recession, this experience has revived interest in an issue that many had thought was long dead.

Several factors are associated with agriculture's poor performance observed in the last 25 years: these include structural and technological constraints; an unfavorable external economic environment; war and civil conflicts; vulnerability to natural disasters; and inappropriate policy and institutional frameworks. Among these factors, agricultural policy and institutional frameworks are of particular relevance because they affect agricultural performance most directly and also are controllable to a certain extent by policy-makers.

Many (although definitely not all) of the policy and institutional frameworks adopted by developing countries during the period have followed the so-called "Washington Consensus", which emphasized the role of market forces in the economy as the main mechanism for resource allocation. The prescriptions emanating from these frameworks had emphasized the need to redefine the role of the public sector in promoting and regulating free and competitive markets, rather than in directly providing and subsidizing goods and services needed for agricultural development.

However, for countries in which markets are yet to emerge or are underdeveloped and frequently fail, applying the Washington Consensus policies produced mixed social and economic results. Compared to the policies that were applied during the immediate post-colonial period (roughly from the 1950s through the mid-1970s), the Washington Consensus policies performed poorly and might have resulted in the slowdown of economic growth, rising inequality and persistently pervasive poverty (McKinley, 2004). At the same time, some developing countries in Asia that followed more calibrated and sequential approaches in economic liberalization had much better results.

This has resulted in the emergence of the so-called "post-Washington Consensus", which is less fundamentalist than the Washington Consensus and is more sensitive to the institutional foundations of policy success. However, the post-Washington Consensus, rather than being a genuine shift in thinking, is more of a defensive window dressing by the advocates of the Washington Consensus (Chang & Grabel, 2004-2005). The core policy proposals of the Washington Consensus still remain at the top of the agenda of the post-Washington Consensus (e.g. strict inflation control, trade liberalization, privatization) and the policy practices of the Bretton Woods institutions have changed relatively little.

The failure of the Washington Consensus approach has been particularly severe in the agricultural sector, where many of the world's poor make their living. Food security, poverty reduction and economic growth depend on improvement in rural productive sectors. However, the withdrawal of the state from a developmental role has negatively affected investment in public goods (e.g. agricultural research, education, extension and infrastructure), which has reduced agricultural

productivity. In addition, market-oriented reforms of financial institutions have left agriculture with even less access to credit than before.¹ Trade liberalization has led to increased competition from imports, which has threatened the livelihoods of many farmers. A simultaneous push for agricultural exports in many countries that specialize in the same products often has resulted in falling prices and export earnings.

Fortunately, these problems are now beginning to be recognized by even the traditional advocates of the Washington Consensus (World Bank, 2008), although it remains to be seen whether this will lead to a real shift in policy paradigm. Among the top current priorities of governments in some developing and transition economies is designing and implementing agricultural policies that overcome the limitations of the Washington Consensus approach and address the challenges faced by these countries.

This study hopes to contribute to addressing these concerns by drawing lessons from history. We look at the history of agricultural policy in developing and transition countries over the last several decades and the history of agricultural policy in today's developed countries when they were at similar levels of development as developing countries are today. The project looks at seven developing countries across three continents including a good performer (Chile), two mixed performers (India and Mexico) and four suboptimal performers (Egypt, Ethiopia, Ghana and Zambia). We also look at three transition economies: one is very successful, although it started from a very low level (Viet Nam) and two have mixed results (Hungary and Ukraine). We also examine rich countries, including Canada, Denmark, France, Germany, Japan, Republic of Korea, the Netherlands, Norway, Sweden, and the United States of America. These countries were all successful in developing their agriculture during the late nineteenth and mid-twentieth centuries (the late twentieth century in Japan, and the Republic of Korea), with France being a partial exception (although it started from a high level of agricultural development, its progress during the period in question was not good).

A general observation from the experiences of the above countries is that despite distinctive country-specific issues, the agricultural policy challenges that confront countries at earlier stages of economic development, today and in the past, are remarkably similar. This means that countries can learn from others' historical and contemporary experiences. This report is a contribution to that learning process.

¹ For example, Tanzania has achieved budget savings from eliminating input subsidies and loss-making government commercial activities, but these have not been directed to vital public support for the agricultural sector. The same has happened in several other countries whose economies depend largely on agriculture and thus need sustained growth in this sector to increase its benefits to the wider economy. See FAO (2006).

2

THE EVOLUTION OF AGRICULTURAL POLICY IN THE POST-WORLD WAR II PERIOD

After the major crisis of free-market capitalism during the Great Depression, there was a general shift towards more state-led models of economic management by the end of World War II. In line with this, agricultural policies became more state-oriented all over the world.

The new world hegemon, the United States, had already overhauled its agricultural policy in that direction in the 1930s in order to deal with the farm crisis that followed the Great Depression. In addition to its already strong government-financed programmes in research, extension and irrigation, it created financial institutions to provide subsidized loans to farmers and introduced government-managed price stabilization schemes. The United States also encouraged land reform in countries under its influence in the belief that it would help fight off (real and imagined) communist threats. It strongly pushed for comprehensive land reform in Japan, and Korea in the late 1940s and early 1950s. It also funded less comprehensive land reform programmes in Latin America through President Kennedy's Alliance for Progress in the 1960s.

The spread of socialism into Eastern Europe and China in the 1940s resulted in widespread agricultural collectivization and the formation of state-controlled cooperatives in many countries. Not all socialist countries completely collectivized their agriculture, however, as the Soviet Union had done since the 1930s. In the 1970s, socialist agriculture was practiced in varying degrees by poor countries like Viet Nam, Egypt and Ethiopia. It goes without saying that the state in these countries directed every aspect of agriculture – product choice, prices, input types, input prices, marketing channels and so on.

The Latin American countries were already independent and started their state-led agricultural development in the 1930s; the best example was Mexican land reform under Cardenas. Most of the developing countries in Asia and Africa that became independent in the two decades following World War II also adopted state-led models of agricultural development.

It was believed that the market mechanism, if left alone, would not be able to supply socially optimal quantities of basic agricultural inputs (e.g. land, water, transport, seeds, fertilizers, pesticide and animal feeds) nor would it be able to provide the means to attain rural income stability (e.g. credit, insurance, stable prices). It was argued that the state needed to provide these inputs directly or subsidize the private sector in providing them. It was thought that deliberate measures needed to be taken to stabilize rural income.

Many developing countries attempted land reform, although few countries could implement comprehensive and successful land reforms – like those that were carried out in Korea – because of political resistance by the landed class. In most countries, the state invested in rural infrastructure (especially irrigation and roads) and in the improvement of land quality. It also provided research and extension, although in many countries the quality of what was provided was not very high because of financial limitations and a shortage of qualified staff.

In many countries, arrangements were made to provide subsidized loans, particularly to small-scale farmers. State-owned or state-subsidized rural banks were established to expand banking access in rural areas and provide subsidized loans to farmers. Rural credit cooperatives (or co-ops) were encouraged and in some countries (e.g. Japan and Korea) government-controlled

general agricultural co-ops provided credits, subsidized inputs and marketing services to farmers. Modern inputs, especially fertilizers and improved seeds, also were supplied by the state or, when supplied by the private sector, heavily subsidized by the state.

The state also regulated the marketing of key agricultural products through state marketing boards in sub-Saharan Africa and through government-controlled co-ops in countries like Japan, and Korea. The state advanced the processing of agricultural products directly (e.g. through state-run agricultural processing plants as in Ghana) and indirectly (e.g. tariff protection and subsidies for processing industries). This was seen as a way to reduce waste (because fresh products have short shelf lives) and to raise rural income by adding value to agricultural products and creating off-farm employment opportunities.

Many countries tried various means to stabilize rural income. Some maintained minimum prices for important products (especially grains) and managed buffer stocks. Key agricultural products, especially foodgrains, were protected from import competition by tariffs and other trade restrictions. Some countries, notably India, provided crop, livestock and other agricultural insurance to stabilize rural income.

Compared to the policies prescribed by the Washington Consensus, or what we call the new conventional wisdom (NCW) in this report, these policies produced very respectable outcomes, especially when they were combined with Green Revolution technologies: another product of government intervention on an international scale. However, they did have some problems of waste and corruption, and therefore started to come under attack beginning in the 1970s by the believers of what later came to be the NCW.

The turning point for agricultural policy in most developing countries came in the 1980s. The obvious exception was Chile, which following the military coup of General Pinochet in 1973, had embarked upon the neo-liberal path before anyone. The traditional state-led agricultural policies experienced serious reversals with the launch of the Structural Adjustment Programmes (SAPs) implemented by the International Monetary Fund (IMF) and the World Bank.

Proponents of the NCW argued that state provision and/or subsidization of inputs (e.g. credit, extension services, irrigation, fertilizers and seeds) was causing inefficiencies and corruption and putting unbearable burdens on state finances. In the context of intense pressure for balancing the budget under the SAPs, it was emphasized that the state could not afford to provide these inputs at subsidized prices. It was advised that the agencies providing these inputs should be privatized and the subsidy elements should be eliminated, or at least radically reduced. State involvement in agricultural marketing (especially attempts to set minimum prices) and processing was to be eliminated, or at least drastically reduced, as it only produced inefficiencies.

The policies recommended under the NCW have produced very poor outcomes in most countries in terms of growth, equality, stability and poverty alleviation. There are good reasons for that which will be discussed later in this report. At this point it is important to highlight the limitations of the very theoretical framework that underlies the recommendations of the NCW in agriculture. Two aspects are particularly important.

2.1 Eliminating “Distortions”

The persistent theme in the NCW was the need to “eliminate distortions”. According to the NCW, state intervention in agriculture (e.g. subsidized fertilizers, artificially cheap credit, tariff protection and state-controlled prices) distorts market signals and therefore channels resources into “wrong” activities. This creates inefficiencies because more outputs could be produced if the resources flowed according to the “right” signals created by the “natural” forces of supply and demand.

At one level, it is impossible to disagree with this view. If prices are distorted, then by definition they lead to distorted outcomes, which, by definition, cannot be good. However, we reach this conclusion only because the whole discourse is set up this way.

Underlying this argument is the assumption that distortions are bad because markets would have worked well without them. However, distortions may be good or bad, depending on what the market outcomes would have been without them. If markets are not working well, distorting the prices that prevail may be a good thing, if that is done for the right purpose.

First, certain government actions may create distortions that create inefficiencies in short-term resource allocation (which is what concerns neoclassical economics, which forms the theoretical basis of the NCW) but that actually may increase long-term productivity. For example, agricultural tariffs can impose short-run efficiency costs, but they may promote agricultural and overall economic growth if the tariff revenues are invested by the government in improving agricultural productivity (e.g. investments in rural infrastructure, research and extension) and/or if the increased agricultural incomes create offsetting extra demand for domestic industries. Agricultural protection had such an effect in Germany in the late nineteenth century and in South Korea in the late twentieth century (Koning, 2007). Therefore, policies that are distortionary in short-term resource allocation actually may help economic growth and poverty alleviation in the long run.

Second, even if we ignore the “dynamic” dimension and focus on short-term allocative efficiency, there are many instances of market failure that justify inducing price distortions in relevant markets. For example, if market signals lead agents to use less than socially optimal amounts of certain inputs, then “distorting” the market signals so that more of those inputs would be used would be socially justified. For example, if the market fails to provide agricultural research (because of the public goods nature of research output and/or the scale economy involved in conducting research), the government may be justified to “distort” the market signals by conducting the research even though it cannot make any profit from it or by providing subsidies to private-sector agents to conduct more research than what market signals would dictate.

Moreover, in some instances, it may be better to create “distortions” even when there is no market failure in the standard sense. For example, in countries where there is no citizenship-based welfare state or well-designed safety net, certain “distortionary” policies (such as tariff protection or a price stabilization scheme) may be the only mechanisms that can provide income stability to small-scale farmers. Greater rural income stability may bring greater political stability – which is good in itself – and also may contribute to growth by encouraging long-term investments. Moreover, income instability means that many people who are not poor over time may occasionally fall below the poverty line. This leads to episodes of malnutrition and interrupted education, which have irreversible negative impacts on people’s productivities in the long run. In this case, agricultural protection may be a good thing, even if there is no market failure in the standard sense.

Of course, in practice, it is difficult to agree about how often and exactly where markets fail. This is one of the main reasons why there is so much disagreement on concrete policy, even when most (if not all) people agree that markets do fail and fail more frequently in agriculture.

Moreover, even if we know how much and what to subsidize, there are many ways to do it, and the best way may differ across countries. For example, South Korea produced subsidized fertilizers in state-owned enterprises and sold them to farmers through state-controlled agricultural cooperatives, while Malawi distributed vouchers to poor farmers (the exact distribution of which was decided by village meetings, rather than by government officials) to buy imported fertilizers. Both types of initiatives have produced good results, but they may not work in other contexts, where, for example, state-owned fertilizer companies are inefficient, cooperatives are corrupt or village power structures are such that the strong hog the vouchers. In other words, even if we know the location and the scale of market failures, the design of delivery mechanisms will matter greatly and the discourse advocating elimination of distortions has nothing to say on this issue.

2.2 Abandoning the “Misguided Concern for National Food Self-sufficiency”

Attaining a high degree of national food self-sufficiency was the goal of many developing countries until the 1970s and one which is still pursued by some today. It has been criticized by the NCW as an illusory goal that is based on bad economics and xenophobia. (See FAO, 2003, Chapter 2 for a comprehensive review of the issues involved in the definition and measurement of food security at different levels.)

The supporters of the NCW have argued that greater engagement with international markets through greater specialization will give the national economy (and, by implication, its individual members) more income and therefore a greater ability to secure the necessary amounts of food. By pursuing food self-sufficiency, it was pointed out, nations forgo the lucrative market opportunities in non-food products (especially those that can be exported to higher-income countries where they will command higher prices) and earn less than what they could have, using the same amount of inputs. It is better, it was argued, for nations (and individual farmers) to maximize their incomes by growing cash crops that they can sell in domestic and international markets and to use the increased earnings to buy food in the global market.

This advice, of course, makes sense in certain circumstances. For example, when cheap grains from the New World and Russia flooded into Europe during the late nineteenth century, most European countries protected their grain producers. However, as we shall discuss later, the Netherlands and Denmark reduced crop production and used the cheap imported grains to feed livestock, which were then processed and exported (e.g. as butter, cheese and bacon). This gave them higher income and thus greater capacity to import everything (including foodgrains), achieving greater national food security.

However, such specialization makes sense in the long run only when countries reach a certain level of economic development.² When countries rise above certain levels of income, even fairly significant declines in their capacity to import food (because of a rise in food prices and/or falls in the prices of their exports) will not reduce food consumption below a certain minimum. In poor countries, however, a fall in food consumption below a minimum level even for a year or two may have serious irreversible negative consequences. There is a hierarchy of human needs in

² It should also be added that the Netherlands' and Denmark's strategies worked only because there were strong public interventions to promote agricultural productivity, as we shall discuss in detail below.

which consumption of food is the most basic. If fluctuating incomes (e.g. because of a fall in the prices of cut flowers that a country exports) or prices (e.g. because of a rise in the prices of food) make it impossible for some people always to consume adequate amounts of food, they are exposed to hunger and malnutrition. This has irreversible negative long-term consequences for people's health and educational achievements and also reduces the productive capabilities of the labour force and the whole economy. Therefore, the issue of national food security needs to be taken very seriously when a country is at a low level of economic development.

Moreover, the argument dismissing national food self-sufficiency concerns is based on the assumption that production portfolios can be easily reshuffled when necessary. In theory, resources can be reallocated into food production if the international prices of food rise sufficiently. However, this adjustment is very slow. Nowhere, outside textbooks of economics, is this adjustment instantaneous, but it is even slower in agriculture because of the time-sensitive nature of agricultural production (i.e. it takes at least one growing season to make the adjustment).

Some staple foods for the African countries – such as cassava, plantains, yams, millet and sorghum in West and Central Africa and white maize in Southern and East Africa (UNCTAD, 1998, p. 141) – are not internationally traded in a significant way outside the region. Transportation costs are also high in many of these countries (UNCTAD, 1998, p. 141). All this means that these countries cannot rely on international trade for their staple foods, as can other countries.

Thus, for countries at low levels of economic development, national food self-sufficiency is not a misguided concern. This is especially true for African countries that have limited trading options for their staple foods and poor transportation infrastructure. When food consumption falls below a certain minimum, the possibility of irreversible damage to a country's productive capabilities, and the obvious human suffering, needs to be taken seriously. The issue of national food-self sufficiency should not be dismissed so easily.

3

LESSONS FROM HISTORY

One unique feature of this report is the examination of the history of agricultural policy in today's rich countries between the late nineteenth and mid-twentieth centuries in an attempt to understand the evolution of agricultural development in the post-World War II period as part of a longer historical phenomenon.

This exercise may seem unjustified. Was not the period in question when today's rich countries were engaged in imperialist projects based on their industrial might, circling the globe, gobbling up weaker countries? Was this not when German companies like I.G. Farben were conquering the chemical world, while the French invented the internal combustion engine and Henry Ford started mass production of automobiles? Was not Japan, the poorest of today's rich countries then, already developed enough to build fighter planes and aircraft carriers by the 1930s? What lessons can we draw from such countries for the Indonesias and Kenyas of today, with nearly half their populations still engaged in agriculture and around 30 percent of their total output originating in the agricultural sector? What about countries like Uganda and Nepal which have 70 percent of their populations in agriculture and 40 percent of their total output coming from the agricultural sector?

However, there are surprising similarities between the rich countries in the late nineteenth and mid-twentieth centuries and today's developing countries in terms of the role that agriculture plays in their economies and the problems they face in the agricultural sector. Let us look at the two simplest but most important indicators of the role that agriculture plays in the national economy – the share of agriculture in total employment and the share of agriculture in total output.³

Until recently, agriculture was very important in providing employment in many of today's rich countries. It is perhaps not totally surprising that 73 percent of Japan's employment in 1885 was in agriculture, given that the country was still struggling to emerge out of feudalism after its forced opening in 1853 and the Meiji Restoration in 1866. However, only 15 years before that (1870), the share of agriculture in total employment in Sweden was 72 percent, which is basically the same as some of the poorest developing countries today (e.g. Madagascar is at 78 percent and Uganda is at 69 percent). Today, Sweden and Uganda could be in different universes, but only four generations ago the agrarian conditions in Sweden were not so dissimilar to those that we find in Uganda today. Twenty years later, in 1890, the share of agriculture in total employment in Sweden was still 58 percent, a level that is similar with that of Viet Nam today (60 percent).

In France, the picture was similar. France's per capita income was 21 percent higher than Sweden's until 1875 (although Sweden, as one of the fastest-growing economies at the time, was

³ Of course, these are only the broadest indicators of the role of agriculture in an economy. For proper comparisons, many more indicators (e.g. the share of commercialized agriculture in total agricultural output and employment, the share of agriculture in exports, the share of high value-added products in total agricultural output, land tenure structure), including some unquantifiable ones (e.g. the dominant relations of production in agriculture), need to be examined. However, such detailed comparisons are beyond the scope of this report because the required information is difficult to acquire, especially for historical cases.

catching up fast).⁴ In 1861, France's share of agriculture in total employment was 53 percent, which is the same as what we find in countries today like Bangladesh (52 percent), Kyrgyz Republic (53 percent) and Georgia (54 percent). This is also similar to the average for 15 European countries (Austria, Belgium, Denmark, France, Germany, Great Britain, Hungary, Italy, Ireland, Norway, the Netherlands, Poland, Russia, Sweden and Switzerland) in 1870, which was 55 percent.

Forty years later in 1910, the average for the above-mentioned 15 European countries fell to 46 percent, which is the level today for Indonesia (45 percent), China (44 percent) and Thailand (44 percent). Even Germany, one of the more developed countries among this group by this time (the fifth richest in the group), was still highly dependent on agriculture even though its chemical and machinery industries were fighting for world supremacy with those of Britain. In 1907, agriculture still accounted for 35 percent of German employment, which is the same level found today in countries like Sri Lanka (35 percent) and Paraguay (32 percent).

Until the mid-twentieth century, the shares of agricultural employment in countries like Sweden (38 percent in 1934) and Japan (39 percent in 1955) were even higher than the German level in the early twentieth century. These are the levels found today in lower-middle income countries like Guatemala (39 percent) and the Philippines (37 percent). As late as 1970, agricultural employment in Japan, at 17 percent, stood at the same level as in Mexico and the Dominican Republic today.

The output data, presented in Table 2, depict a similar picture. In 1870, the share of agriculture in total output was 50 percent in Denmark and 47 percent in Sweden. These figures are found today in countries like Democratic Republic of Congo (48 percent) and Lao People's Democratic Republic (47 percent). In 1885, the share of agriculture in total output in Japan (45 percent) was the same as the levels found today in some of the poorest developing economies, such as Ethiopia (44 percent) or Sierra Leone (46 percent).

Even in Germany, the share of agriculture in total output was as high as 41 percent until 1870, when the country was rapidly emerging as one of the main industrial powers of the world. This is a level similar to what we find today in low-income countries like Rwanda (42 percent), Niger (40 percent), Nepal (39 percent) and Malawi (39 percent).

The share of agriculture in total output stood at approximately 30 percent in Denmark and Japan until around 1920. This figure is comparable to that of Burkina Faso (31 percent), Uzbekistan (31 percent), Madagascar (29 percent) and Kenya (28 percent) today.

The shares of agriculture in output in Norway in 1910 (24 percent), Germany in 1913 (23 percent), Denmark in 1930 (20 percent) and Japan in 1955 (21 percent) were at levels found today in Tajikistan (24 percent), Pakistan (23 percent), Cote d'Ivoire (23 percent), Guatemala (23 percent), Nigeria (22 percent) and Zambia (21 percent).

Until as late as 1939 in Sweden and 1960 in Japan, the share of agriculture in total output was 13 percent – a level that is found today in countries like India (15 percent), China (13 percent), Romania (13 percent) and Dominican Republic (12 percent).

⁴ France's per capita income in 1875 is estimated to have been US\$2 219 in US\$1990 prices. For the same year, Sweden's income is estimated to have been US\$1 835. The numbers are from Maddison (2003) and expressed in purchasing power parity terms in "1990 international Geary–Khamis dollars".

Table 1: Share of agriculture in total employment*
(in percentages)

Rich countries in the past	Year	Share	Today's developing countries (2002-2004) and their share
Korea	1960	80	Madagascar (78) <i>Ethiopia (75)</i>
Japan	1885	73	
Sweden	1870	72	
Japan	1900	68	Uganda (69)
Norway	1865	60	<i>Viet Nam (60)</i>
Sweden	1890	58	
Germany	1852	55	Georgia (54) Kyrgyz Republic (53) Bangladesh (52) <i>Ghana (51)</i>
Europe 15 +	1870	55	
Japan	1920	54	
France	1861	53	
Korea	1970	51	
Germany	1880	49	Armenia (46) Indonesia (45) Morocco (45) China (44) Thailand (44)
Norway	1890	49	
Sweden	1910	48	
Denmark	1870	47	
Japan	1935	47	
Europe 15 +	1910	46	
Denmark	1900	40	Guatemala (39) Philippines (37)
Norway	1910	39	
Japan	1955	39	
Sweden	1934	38	
Denmark	1910	36	Romania (35) Sri Lanka (35)
Germany	1907	35	
Korea	1980	34	Paraguay (32) <i>Egypt (29)</i>
Japan	1960	32	
Sweden	1939	30	<i>Ukraine (20)</i> <i>Mexico (17)</i>
Korea	1990	18	
Japan	1970	17	<i>Chile (14)</i>
			<i>Hungary (6)</i>
Japan	1990	6	

* Agriculture includes forestry and fishing.

+Europe 15 is the average for 15 European countries which are Austria, Belgium, Denmark, France, Germany, Great Britain, Hungary, Italy, Ireland, Norway, the Netherlands, Poland, Russia, Sweden and Switzerland.

Note: The names of the developing and transition countries that were studied for this project are shown in italics.

Sources:

Denmark: Henriksen (1992), p. 154, Table 1.1

Germany: Blackbourn (1997), p. 188 and p. 393

Japan: Sugihara (1996), p. 157, Table 7.2

Korea: Francks et al. (1999), p. 37, Table 2.6.

Norway: Hodne (1973), p. 106, Table 8.

Sweden: The data for 1870 and 1934 are from G. Ytterborn (1938), p. 185. Data for other years are from Schön (2006), Table 1. The two data sets are not fully compatible. For one year where there is an overlap, that is, 1870, Ytterborn gives 72 percent but Schön gives 69 percent.

15 countries: Zanden (1991).

Developing countries: World Bank (2008), Table A1, except for Ethiopia and Ghana, which are from our own case studies.

Table 2: Share of agriculture in total output
(in percentages)

Rich countries in the past	Year	Share	Today's developing countries (2003-2005) and their share
Denmark	1870	50	Congo, DR (48)
Sweden	1870	47	Lao DPR (47)
Korea	1953	47	Sierra Leone (46)
Japan	1885	45	<i>Ethiopia (44)</i>
Germany	1870	41	Rwanda (42)
Denmark	1885	40	Togo (42)
Japan	1900	39	Niger (40)
Korea	1961	39	Nepal (39)
Denmark	1890	38	Burundi (38)
			Malawi (38)
			<i>Ghana (37)</i>
Norway	1865	34	Uganda (32)
Sweden	1890	33	Burkina Faso (31)
Denmark	1895-1920	30-32	Uzbekistan (31)
Japan	1920	30	Madagascar (29)
Norway	1890	27	
Sweden	1910	27	Kenya (28)
Korea	1970	27	Chad (26)
Norway	1910	24	Tajikistan (24)
Germany	1913	23	Pakistan (23)
Japan	1955	21	Cote d'Ivoire (23)
Denmark	1930	20	Guatemala (23)
			<i>Viet Nam (22)</i>
			Nigeria (22)
			<i>Zambia (21)</i>
			Paraguay (21)
			Moldova (20)
			<i>India (19)</i>
Sweden	1930	16	<i>Egypt (16)</i>
Korea	1980	15	
Sweden	1939	13	China (13)
Japan	1960	13	<i>Ukraine (12)</i>
			Dominican Republic (12)
Japan	1970	7	<i>Chile (6)</i>
			<i>Hungary (5)</i>
			<i>Mexico (4)</i>

Note: The names of the developing and transition countries that were studied for this project are shown in italics.

Sources:

Denmark: Henriksen (1992), p. 154, Table 1.1 and Henriksen (2006).

Germany: Blackburn (1997), p. 188 and p. 393.

Japan: Sugihara (1996), p. 157, Table 7.2

Korea: Lee (1999), p. 558, Appendix Table 3.

Norway: Hodne (1973), p. 106, Table 9.

Sweden: The data for 1870 and 1934 are from G. Ytterborn (1938), p. 185. The data for other years are from Schön (2006), Table 1.

Developing countries: World Bank (2008), Table A1.

Therefore, it is not as fanciful as it may sound at first to compare the agricultural conditions and policy responses in today's rich countries between the late nineteenth and mid-twentieth centuries with those that prevail in today's developing countries, including the poorest and most agrarian ones. In the late nineteenth century, the conditions for agriculture in today's rich countries were similar, at least in terms of the broadest indicators of employment and output shares, to today's poorest developing countries (e.g. from Madagascar to Bangladesh).

Even after a few decades of what then was rapid industrial development, the conditions in the agriculture of today's rich countries in the early twentieth century were similar to what we find today in the poorer (though not the poorest) developing economies, from Rwanda and Malawi at the bottom to Pakistan and Guatemala at the top. From the 1930s to the 1950s, the conditions in the then poorer of today's rich countries, such as Japan and Sweden, were still in the range of Pakistan and Guatemala today.

Given these structural similarities, it is not surprising that today's rich countries all grappled with issues very similar to those with which today's developing countries are struggling – landlessness, fragmentation of holdings, lack of irrigation and other rural infrastructure, backward technologies, limited availability of credit to small-scale farmers, excessive price fluctuations, limited availability and poor quality of farm inputs (especially fertilizers), poor warehousing and marketing facilities (which often force farmers to sell at the wrong time and wrong prices), food insecurity and trade shocks (which in this period were mainly caused by the inflow of New World wheat and meat enabled since the 1870s by the spread of steamships and refrigeration). Given the similarities of the problems, it is also not surprising that the policy and institutional solutions devised by the farmers and governments of those countries were very similar to what today's developing countries may contemplate (although not necessarily be able to implement for reasons that we will discuss later, including the influence of the NCW).

There are obvious limitations to drawing lessons from the historical experiences of countries that operated under different geographical, climatic, technological, demographic, economic, political and international conditions than those we find in today's developing countries (which are much more diverse than the rich countries). Indeed, it would be a mistake to suggest that policies that worked in Sweden in the late nineteenth century would work in today's Viet Nam because in both of them agriculture accounts for 60 percent of employment or that policies that worked in 1950s Japan would work in today's Zambia because in both of them agriculture accounts for 21 percent of gross domestic product (GDP). This would be the same mistake as that made by the proponents of the NCW, who have been accused of issuing “one-size-fits-all” policy recommendations.

However, there are some policies and institutions that can be applied fairly universally regardless of time and space, such as land quality improvement initiatives, rural credit schemes, public or subsidized warehousing and price stabilization programmes. There are others that may be applied with relatively minor modifications – such as infrastructural development, extension services and consolidation of fragmented holdings. There are still others whose applicability may be limited due to domestic capabilities (e.g. agricultural research), domestic political conditions (e.g. land reform) or international politics (e.g. agricultural protection), but even in these areas there are useful lessons that can be derived from the history of today's rich countries.

4

POLICY LESSONS FROM DISTANT AND RECENT HISTORY

This section discusses the range of agricultural policies that have been pursued in the past in today's rich countries and over the last 60 years in today's developing and transition countries. It draws lessons from these experiences for contemporary developing countries. The section is divided into two main subsections – inputs policy and outputs policy.

4.1 Inputs Policy**4.1.1 Land policy: land tenure reform and land quality improvement**

Although there are agricultural activities that use a minimal amount of land (such as highly advanced hydroponic agriculture in the Netherlands today), it is difficult to think of agriculture without land. It is thus not surprising that the “land question” has been central in agricultural sector development of most countries throughout history. Especially in the early stages of economic development, most countries have problems with landless rural populations. For this reason, land reform – or redistributing land to the landless or to those who own too little land to make a decent living from it – has been at the centre of debate regarding agriculture in all countries to one degree or another.

We can (and should) debate whether land reform that creates many small holdings is the best way to proceed in all circumstances. There may be contexts in which large-scale agriculture may be more efficient. Many of the former socialist countries certainly thought so, although their experiences (with Hungary being partially the exception) do not inspire great confidence in the solution of collectivization. In other contexts, the labour-land ratio is so high that the holdings created through egalitarian land reform may not be viable in the long run. However, in many countries, egalitarian (i.e. redistributive) land reform seems to have worked quite well when combined with complementary measures to increase agricultural productivity, stabilize agricultural income and create non-agricultural jobs (i.e. rural off-farm employment as well as industrial employment).

In countries with an abundant supply of unsettled public land, land reform could take the form of giving away, or selling at subsidized prices, unused public land to settlers. A classic example is the 1862 Homestead Act of the United States, which granted 160 acres of public land (mostly taken from the Native Americans) to anyone who would till it for more than five years (Garraty & Carnes, 2000, p. 423) (see Box 1). In the mid-nineteenth century, Swedish Crown lands were granted to settlers in the sparsely-settled north (Freund, 1946, p. 125).

In countries where there is significant population pressure and land ownership is concentrated, there is a natural demand for redistributive land reform (i.e. “land to the tiller”). In the former socialist economies, land reform resulted in significant, although by no means uniform, degrees of collectivization either in state farms or state-dominated cooperatives. Poland and the southern part of Viet Nam, for example, had low degrees of collectivization. After the fall of socialism, these countries did “reverse” land reform and broke up large collective farms and cooperatives.

The NCW has a rather contradictory attitude on the land issue. On the one hand, because it believes in the incentive effect of land ownership by individual cultivators, it supports the break-up of underutilized large farms into owner-cultivated small farms. On the other hand, it

believes that land markets should be deregulated so that entry into and exit from agriculture becomes easier.

Box 1: Distribution of public land in the United States

Lack of finance was a problem in the United States, which had a long history of selling public land at subsidized rates (Ingersent & Rayner, 1999, pp. 57-8). This practice started when the country became independent, when confiscated British Crown and aristocratic lands were auctioned at below-market prices. However, these lands were beyond the reach of small-scale farmers – despite the availability of subsidized public credit – because they were sold only in big parcels. Although the land parcel size in public auctions was gradually reduced, subsidized public credit was also abolished and therefore the land was still beyond the reach of small-scale farmers. As a result, there were many landless peasants who illegally occupied public land, despite the country's plentiful supply of land.

This led to pressure to retrospectively recognize squatter rights. However, the growing agitation among landless peasants for free redistribution of public land (much of it forcefully taken from Native Americans) was resisted by southern landlords, who occupied a powerful position in national politics at the time. The drive for free redistribution of public land was not successful until the outbreak of the Civil War in 1860 and the subsequent passing of the Homestead Act in 1862. The Homestead Act, however, was not as successful as its promoters had hoped because it gave away land without providing financial support to poor, prospective homesteaders to secure farm equipment and draught animals (Garraty & Carnes, 2000, pp. 486-7).

However, the NCW does not fully recognize the potential contradiction between these two positions. Deregulated land markets almost always lead to reconcentration of land ownership, nullifying the result of land reform. For example, in Chile, close to 50 percent of the beneficiaries of the pre-Pinochet land reform had sold out by the mid-1980s, especially in the face of diminishing state support in credit, extension and other inputs (see Box 2). Below a certain level, a holding becomes too small for farmers to survive the negative shocks that are frequent in agriculture.⁵ Sooner or later, such holdings will be hit by a shock and the owners will have to sell out to survive. Large-scale farmers (be they commercial farms or traditional landlords) who can more easily survive those shocks can buy these fragmented farms and expand. In countries without strong primogeniture, holdings will be fragmented after a generation or two, making eventual reconcentration more likely.

Despite this, the supporters of the NCW insist that there is “little justification for policy measures to restrict land sales” (WDR, 2008, p. 142). However, without such restrictions, land ownership is likely to be concentrated again in the hands of few. Indeed, the very success of land reform in Japan and Korea, which the World Bank praises, was possible partly because of the strict imposition of a land ownership ceiling in the early days of land reform (see Box 3).⁶ Even in India, where land reform has produced mixed results, a land ownership ceiling is considered to have been important in reducing inequality in land holdings (India case study).

⁵ Obviously, the minimum threshold varies widely depending upon the crop, land quality, technologies used and many other factors.

⁶ It is true that the absence of land markets, or the presence of excessively regulated ones, can retard agricultural development. The absence of a land rental market in post-socialist Hungary has led to the abandonment of cultivation on lands owned by elderly people or people who had been “returned” their private land after the fall of socialism but who had already moved to the city (Hungary case study). Inability to sell, rent, or use as collateral the communal land created by land reform (*ejido*) has restricted the ability of Mexican agriculture to attract investment (Mexico case study). At the same time, some restrictions on the land market need to be in place if land reform is to be sustainable.

Box 2: Chilean land reform

In 1962, a land reform law (law number 15 020) was approved allowing the expropriation for private farms with a long-term payment for the land. In order to administer this process, a land reform agency *Corporacion de Reforma Agraria* (CORA) was created. In 1965, the land reform process gained momentum when new legislation (law number 16 640) was approved that gave CORA greater freedom and expediency for expropriating large productive and unproductive estates. Also, another significant law was passed allowing the unionization of farm workers (law number 16 625).

During the Frei government (1964–1970), 3.6 million hectares, (12 percent of the country’s agricultural land) were expropriated, benefiting 30 000 families. The expropriated farms were organized into a form of cooperative production unit, where the associates were the workers living on the estate. CORA appointed an administrator for the first three years, after which the administrator was elected by the farmers if they wished to continue as a unit. Alternatively they could choose to divide the land into family lots. During this period, approximately 50 percent of the farm labour force was organized into farm unions.

Land reform was supplemented by policies to enhance productivity. During this period, Chile identified its main agricultural products with potential – temperate fruits, wine, forestry, livestock and dairy in the south – and implemented policies to realize their potential. The policies were aimed at raising agricultural productivity and included providing long-term credit (at positive real interest rates but with grace periods), technical assistance, public investment in basic processing infrastructure (e.g. packing, freezing plants for fruits, wine production and milk processing and cellulose plants) and special incentives to organize cooperatives in these products. Thanks to these programmes, Chile’s agricultural growth rate jumped from the sluggish rate of 1.8–2.0 percent per year to a sizeable 5 percent per year, despite the disruption from the land reform process.

Land reform efforts were intensified under the left-wing government of Salvador Allende. However, as land seizures became widespread, the confidence of the remaining large-scale and medium-scale farmers was severely affected. In addition, the incentives in the reformed units were grossly distorted because beneficiaries received an income irrespective of the work conducted. Hence, most of their time was dedicated to the small plots surrounding their houses, which had existed since the *latifundia* times. Moreover, during this period the reformed farms were left with little technical assistance and credit supply, resulting in a drop in agricultural output of 4.8 percent per year between 1970 and 1973.

After the military coup by General Pinochet in 1973, lands that had been reformed were distributed as private plots (to the former farm workers of the expropriated farms), returned to their previous owners or auctioned off to private investors. This process was completed around 1979. As a result, about 30 percent of the land that had been seized towards the end of the Allende period was returned to its previous owners. Furthermore, another third of difficult-to-divide lands was auctioned to the highest bidder. The rest was split into private plots for the former estate farm workers.

However, the reduction in public support and the high interest rates (which reached up to 60 percent in real terms in some years) meant that the new owners could not farm their land properly and were forced to sell out at very low prices. By the mid 1980s, it was estimated that close to 50 percent of land reform beneficiaries had sold their properties, despite the efforts made by the growing non-governmental organization (NGO) movement led by the Catholic Church and other religious denominations to replace the dwindling state support.

Source: Chile country case study.

Of course, a land ownership ceiling is not enough to sustain land reform. If it is to succeed, land reform requires many measures to raise the agricultural productivity of the newly-created small-scale farms. Once again, the position of the NCW in this regard is highly contradictory. The

NCW does recognize that redistributive land reform is likely to fail unless accompanied by “improvements in access to managerial skills, technology, credit and markets” (WDR, 2008, p. 42). However, it believes that such improvements can come mainly through greater freedom for market forces. It fails to recognize that greater liberalization of markets, which it seeks, is likely to reduce the availability to owner-cultivators of those very services that improve “access to managerial skills, technology, credit and markets”.

Distant and recent history show that a broad range of policy measures are required if land reform is to succeed and, more importantly, be sustained.

First, it is not enough to give those who lack enough land the right to buy the redistributed land; they need access to finance. For example, after the revolution in 1789, France implemented land reform and redistributed the land owned by the nobility and the church (Ingersent & Rayner, 1996, p. 28 and Tracy, 1989, p. 61). However, much of the land was sold to large-scale farmers, because the small-scale tenants had no financial means to buy the land. The same problem was observed in Germany after the 1848 revolution, when peasants acquired the right to buy the land they farmed (although in this case, some limited financing was provided by the state land bank) (Tracy, 1989, p. 85). The same problem dogged the United States, even after the 1862 Homestead Act (see Box 1). In contrast, countries that succeeded in creating viable small holdings provided subsidized credit to small-scale farmers. Danish land reform, which started slowly in the seventeenth century, became established only when the government provided subsidized public loans in 1899 to tenants to buy land to form small holdings (Kristensen, 1930, p. 232). Under this new regime, “small farmers [could] borrow at low interest nine-tenths of the value of the [newly-acquired] farm” (Warming, 1923, p. 508). The success of land reform in East Asia was also based on a similar scheme of subsidized financing (see Box 3).

Once small holdings are created, measures may be needed to prevent the reconcentration of land ownership. As mentioned earlier, land reform results were sustained in East Asia only because a land ownership ceiling was strictly applied (see Box 3). Another less direct and less effective measure to prevent land ownership reconcentration is to legally prevent subdivision of small farms below a certain size so that not too many farms become too small to be viable and therefore vulnerable to shocks. Following its policy at the turn of the twentieth century to encourage the creation of small holdings, the Danish Government introduced a law in 1925 banning the subdivision of small farms (Kristensen, 1930, p. 231). Germany also used similar methods in the early twentieth century.

Even with ownership ceilings, most holdings will be fragmented within a generation or two. Therefore, land reform best achieves the aim of creating viable small holdings when it is complemented by measures to absorb the additional labour that results from population growth. This can be accomplished by creating non-farm rural and non-rural jobs. The East Asian land reform was particularly successful because the rapid creation of urban jobs (and rural non-farm jobs in Japan but not in Korea) meant that holdings did not have to be subdivided to the point of threatening their viability (FAO, 1966, for Japan and Francks *et al.*, 1999, for Korea).

Measures are needed to stabilize farm income to prevent marginal farmers from experiencing large negative income shocks and having to sell their lands out of desperation. Price stabilization policy is an obvious measure that has been used successfully in countries like Japan and Chile, less successfully in countries like India and very poorly in countries like Zambia. Encouraging, or even requiring, state-subsidized crop or livestock insurance is another possible solution which has been successfully used in Germany, Japan and the United States and, increasingly, in India.

Box 3: East Asian land reform

Japan

The Japanese experience with the land issue, culminating in land reform after World War II, shows that appropriate land policy differs based on technology and social structures. From 1872–1908, land redistribution was not an urgent issue in Japan because many Japanese landlords were tillers themselves and showed keen interest in increasing land productivity (FAO, 1966, p. 17). However, land tenure became a major issue in Japan during the interwar period because of the rise of absentee landlordism and the resultant relative stagnation of agriculture.

During this period, the Japanese government tried to obviate the need for land reform by providing subsidies for purchases of land by tenants and also by strengthening tenant rights. In 1937, it launched a scheme where agricultural associations advanced loans to tenants to buy excess land from their landlords and interest payments on these loans were subsidized by the government. In 1938, the Farmland Adjustment Bill was introduced to legally recognize a tenancy agreement even if it was not formally registered; this prevented landlords from refusing to renew a tenancy except in cases in which the tenant had committed wrongful conduct (FAO, 1966, p. 18).

After the end of World War II, the Japanese government, under pressure from the United States, finally acknowledged that comprehensive land reform was needed. In 1946, the Special Law on Creation of Owner-farmers was introduced. Under this law, all farmland owned by absentee landlords and all farmland leased by resident landlords in excess of 1 hectare (4 hectares in Hokkaido, where land is less fertile) was bought by the government at below-market prices (Putzel, 1992, p. 73). Naturally, the landlords resisted the law by filing lawsuits regarding its constitutional validity, arbitrarily evicting tenants, conducting illegal sales, falsely insisting that they were the actual tillers of the soil and virtually maintaining possession of large farmlands through nominal subdivision. However, despite their resistance, nearly 80 percent of the tenant-cultivated land was ultimately transferred to the tenants (FAO, 1966, p. 19).

In 1952, the Japanese Government introduced the Farmland Law that “consolidated land reform by restrictions on the transfer of farmland, restrictions on the possession of tenanted land, control of farmland rents and the protection of the rights of tenants” (FAO, 1966, p. 19). It prohibited the acquisition of farmland by small-scale owners and large-scale farmers, leasing of farmland acquired through the reform, subleasing by tenants, possession of farmland by absentee owners (and more than 1 hectare of leased land by resident owners) and the cancellation of farmland lease contracts. It also fixed farmland rents. These measures, when combined with other measures that increased farm productivity and created non-farm jobs in rural and urban areas, prevented reconcentration of land and made the land reform effective.

Republic of Korea

As in Japan, land reform in Korea distributed land to the tillers and encouraged former property owners to invest their compensation in industry. Programmes for investment in agriculture and lending schemes for rural areas were established. In the course of the reform, 65 percent of the agricultural land was redistributed. A ceiling on all individual holdings was set at 3 ha of good cropland. Land in excess of this ceiling was distributed in units of 1 ha to former tenants. This low ceiling enabled nearly 76 percent of all agricultural households to own land for the first time. Under the impact of the reform, agriculture achieved an annual growth rate of almost 4 percent.

Sources: FAO 1996 and Cox *et al.*, 2003, Annex 1.

Also, there should be efforts to raise land productivity so that smaller holdings, which inevitably will emerge through the inheritance process (unless there is a very strong system of primogeniture or legal ban on subdivision as in the examples cited above in Germany and Denmark), can sustain more people. This requires the supply of subsidized modern inputs (e.g. irrigation, fertilizers) and the credit that may be needed to purchase such inputs. The failure to supply inputs severely restricted the viability of the redistributed holdings and the effectiveness of various land reforms, such as the Mexican land reform after 1958 (Mexico case study), the Chilean land reform under the Allende government (see Box 2) and the Indian land reform after independence in 1947 (India case study).

Another way to sustain the viability of small holdings is to encourage investment in land quality improvement. Land degradation is a serious problem in many poor developing countries, such as Ethiopia (see Box 4). Measures to prevent land degradation (e.g. prevention of top soil erosion through appropriate management of water and forestry) and programmes to enrich depleted land (e.g. replenishment of soil nutrients) would be important. In Germany, the state-supported Hypotheken Banks provided loans for land quality improvement. In Japan after World War II, Japan Hypothec Bank, established in 1897 on the German model, and regional agricultural and industrial banks provided loans to encourage land improvement (Sugihara, 1996, p. 156).

The second democratic government of Chile (1994–2000) implemented the Recuperation of Degraded Soils Programme (PRSD), which provided subsidies to activities aimed at recovering the levels of phosphorus and vegetative cover and reducing the levels of acidity, erosion or other chemical or physical soil deterioration (Chile case study).⁷ Ghana tried a similar scheme but had relatively little success, unlike the success it had in the area of rural credit. In Ukraine, the neglect of land quality maintenance during the transition period resulted in a serious decline in land productivity that especially threatened the viability of small farms (Ukraine case study).

Box 4: Land degradation in Ethiopia

Although Ethiopia is said to be endowed with enormous biophysical potential, it is one of the countries most affected by land degradation. Expansion of crop land into forest and marginal lands, and overgrazing are the most important degrading factors, which in turn are caused by an increased population pressure and lack of technological progress.

For instance, the average gross soil loss in the country is currently estimated to be 1 493 million tonnes per year; fifty percent of the soil loss was from cropland and 20 percent was from grazing areas. This has led to an even greater horizontal expansion of cropland and hence worsening land degradation. A study published in 2005 estimated the cost of on-site soil loss to be between 2 and 6.75 percent of agricultural GDP per year. A 1997 estimate by the Environmental Protection Authority estimated that the loss could be as high as 17 percent of the potential agricultural GDP.

Public policies to prevent land degradation have been woefully inadequate. The government of the imperial regime totally overlooked the need for sustainable land management (SLM). SLM practices in Ethiopia started during the socialist regime, in 1973/74. However, they were based on a top-down approach and thus poorly implemented. After market liberalization, the Ethiopian government ignored land management and concentrated on increasing the volume of production. For instance, it has encouraged the expansion of commercial farms and resettlement of drought victims and landless youth in the forest areas, which has resulted in fast depletion of the forest.

Local and international NGOs have tried to fill the gap by implementing environmental rehabilitation and soil conservation programmes. While these programmes have been largely successful, they have been concentrated in the most degraded parts of the country and therefore have remained small in scale. Moreover, these projects lacked continuity because of lack of funding (given the capital-intensive nature of the projects), lack of adequate knowledge and poor commitment of the local government and the community stakeholders.

Source: Ethiopia case study.

⁷ One of the components of this programme was oriented to small-scale farmers and administered by the National Institute of Agricultural Development (INDAP). It subsidized between 50 percent and 80 percent of the cost of the measures and fertilizers needed to overcome soil conservation and rehabilitation problems. Another component of the programme focused on the rest of farmers. It was administered by the Agricultural and Livestock Service (Servicio Agrícola y Ganadero or SAG) and subsidized between 50 percent and 80 percent of the costs for the reduction of soil acidity and the recovery of pasture and phosphorus levels in the soil. The subsidies in this case were allocated through competitive biddings.

Policies can be implemented to consolidate dispersed plots that constrain productivity by preventing mechanization and wasting the farmers' time in moving from one plot to another. Sweden in the early to mid-nineteenth century (Freund, 1946, pp. 124-5; Tuma, 1971, p. 240), Japan in the early twentieth century (FAO, 1966, p. 13), and the Netherlands in the 1920s (Ingersent & Rayner, 1999, p. 30) all implemented policies to encourage consolidation of plots. More recently, certain Indian states – notably Maharashtra, Punjab and Uttar Pradesh – “took the programme of consolidation of fragmented holdings quite seriously” (India case study). In contrast, Hungary's failure to pay attention to this issue in the process of post-socialist land reform has resulted in an average property of about 3 hectares consisting of five to six allotments in different locations. This fragmentation is deemed to be “one of the largest obstacles to rational land use in Hungary” (Hungary case study).

4.1.2 Knowledge: research, extension, education and information

Like all other economic sectors, agriculture requires better technologies to increase productivity. Of course, farmers have always innovated technologically, including through selective breeding and making improvements in agricultural implements. However, from the nineteenth century, technological improvements in agriculture have become more systematic and scientifically-based, making it very difficult, if not totally impossible, for individual farmers to conduct them on their own. Deliberate and organized research is needed now to produce better technologies in agriculture.

Once research produces new technologies, they need to be passed on to farmers. This process requires many institutions and organizations to demonstrate the value of the new technologies and teach the farmers how to use them; these are collectively called “extension services”. The farmers need to be educated so they can better apply the technologies and also engage in incremental innovations. In the process, farmers need to be exposed to information that will raise their awareness about new technological opportunities and shifting demand patterns. Therefore, a whole set of institutions and organizations have come to be needed for technological improvements in agriculture.

Due to the public goods nature of knowledge, the market tends to under-invest in the generation of new knowledge. This justifies public intervention – either direct state provision or subsidization. Increasing costs of producing and disseminating knowledge have made public involvement even more necessary, because many of these activities are moving beyond the reach of individual farmers or even farmer cooperatives. Therefore, public intervention in providing research, extension, education and information has become more important.

The NCW recognizes the problems involved in producing and extending new agricultural technologies through the market mechanism. However, it believes that market failures that justify state intervention in providing knowledge are not very serious and it has therefore strongly promoted involvement of the private sector in providing knowledge.

The result of following the NCW often has been severe cuts in agricultural research and extension budgets, even when it does not actively recommend such action. The NCW has always emphasized budget balancing, which leads to cuts in expenditures. Of course, this applies to every sector, but agriculture has been hit particularly hard by these cuts, because the agricultural ministry is politically weak in most countries (not just in relation to the finance ministry which holds the purse strings, but also in relation to other spending ministries). Also, cuts often were made in agricultural research and extension because these are long-term expenditures and so cuts in these areas might not have many visible short-term consequences. These tendencies were

compounded by the cuts made in the agricultural components of foreign aid that these countries received.

When countries followed the NCW and privatized or liberalized providing knowledge in agriculture, the results have been disappointing, to put it mildly. In many cases, there simply were not enough private firms to fill the gap left by the state's departure in these activities, especially in research and extension. For example, in Mexico, NCW policies have resulted in insufficient provision of agricultural knowledge and other public goods needed in the sector, such as infrastructure and safety standards.

These examples contrast with the fantastic successes that publicly-led (although not entirely publicly-provided) research and extension services have had in countries like the United States and Japan. Even Chile (which initially privatized and significantly liberalized providing knowledge in agriculture following the recommendations of the NCW) has come to recognize the limitations of the market-based approach and over time has increased public financing and provision of knowledge in agriculture. While it is true that before the rise of the NCW, state-provided research and extension services in some developing countries were inefficient, this was usually because of a lack of funding and qualified manpower, rather than the inherent inefficiency of public provision of these services.

Research

Technology in agriculture is a public good. Its use by those who did not pay for it is difficult to prevent (this is known as non-excludability) and therefore it is undersupplied by the market. However, there is an added difficulty in producing agricultural technologies. Production of knowledge, even if the use of the new knowledge by non-payers can be prevented (e.g. through a patent system), often requires substantial investments. Significant investments may not be a problem when the agent is a large industrial firm or a large commercial agricultural producer, but it can be a crucial obstacle to knowledge production in an agricultural sector dominated by small-scale farmers, which we find in most developing countries. As a result, governments throughout history intent on improving agricultural productivity have been involved in conducting or at least subsidizing agricultural research.

Germany established the first endowed public agricultural research institute in the world in Mockem, Saxony in 1852 (Ingersent & Rayner, 1999, p. 43).⁸ Other European countries that have been most successful in agriculture, such as Denmark and the Netherlands, also heavily promoted agricultural research. In Denmark, the Royal Agricultural Society (established in 1769) started from 1857 to organize "laboratory work of interest to farmers" and "played a leading role in persuading the state to establish in 1858 the Royal Veterinary and Agricultural College" (Ingersent & Rayner, 1999, p. 44). In the Netherlands, in addition to the experimental station at the agricultural university in Wageningen, which was first established as an agricultural school in 1876, five additional experimental stations were set up by the end of the nineteenth century (Ingersent & Rayner, 1999, p. 44). In contrast, the lack of effective public research in agriculture partly contributed to the relatively low productivity growth of French agriculture during this period (Ingersent & Rayner, 1999, p. 42).

⁸ "The Saxon farmers drafted a charter for the station, which the Saxon government legalized by statute, and secured an annual appropriation from the government to finance its operation, inspired by the works of J. von Liebig, the German chemist who pioneered the development of artificial fertilizers". (Ingersent & Rayner, 1999, p.43).

At least since the 1860s, the United States has provided a huge amount of public research and development (R&D) in agriculture, directly (e.g. federal agricultural research labs and experiment stations) and indirectly (e.g. through establishing land grant colleges in 1862, which were obliged to provide agricultural research) (see Box 5).

Box 5: Agricultural research in North America

The United States has had the most success in agricultural research. The first Agricultural Experiment Station (AES), which provided publicly-funded agricultural research, was set up in Connecticut in 1877. In 1887, Congress passed the Hatch Act to provide federal grants to state governments to create AESs. Since most AESs were attached to land grant colleges, this Act promoted the integration of teaching and research. By 1893, there was at least one station in each state and 56 in all (Gras, 1925, p. 390). In 1925, the Purnell Act provided more financial support for AESs, including for research on “economic and social problems of agriculture”. (USDA website <http://www.ars.usda.gov/is/timeline/1920chron.htm>).

The activities of the AESs were supplemented by the research provided by the Agricultural Service of the United States Department of Agriculture (USDA). The USDA acquired Cabinet status only in 1862, which is surprising given the importance of agriculture in the country at the time (Ingersent & Rayner, 1999, p. 63).⁹ In addition to conducting public research, the USDA also has provided R&D subsidies to the private sector since 1889 (Ingersent & Rayner, 1999, p. 58).

Canada is another country that benefited from public research in agriculture. In 1886, the country started five experimental stations. By 1936, there were 33 experimental stations and farms, 14 substations, 11 branch laboratories and 233 illustration stations. In 1937, the research function was split between the Experimental Farm Service and the Science Service (including botany, plant pathology, etymology, bacteriology and chemistry) (Estey, 1988, p. 53). However, this split created problems because the Experimental Farm Service was considered low-grade, while the Science Service became increasingly detached from the real world. In 1959, the Canadian government, recognizing this problem, merged all research activities into the Research Branch, except for animal diseases (the research on which was done by the Production and Marketing Branch) and agricultural economics (which was dealt with by the Administrative Branch). Federal illustration stations were phased out (Estey, 1988, p. 54).

In most developing countries today, there has been clear recognition of the importance of public intervention in agricultural research. While most people consider Chile to be a free-market success story, even that country has had a very strong policy towards agricultural research that has been getting even stronger. For example, in the late 1990s, the Chilean government revitalized the Agricultural Innovation Fund (FIA), which had been created in 1981, and offered subsidies to private-sector activities that promote agricultural technologies (e.g. research and learning tours) (Chile case study).

However, lack of resources has severely constrained public support for agricultural research in many developing countries. Even when they have financial resources for agriculture, governments [in poor countries] tend to use them on things that will have more immediate impacts, such as fertilizer subsidies and marketing expenditures. Zambia is a good example of this (Zambia case study).

⁹ Ingersent & Rayner (1999) argue that the research conducted by the USDA, which tended to focus on biochemical research, had little impact because agricultural technological progress in the United States was at the time mainly based on mechanization (p. 73).

Donor financing is an obvious solution to this problem, but this raises questions about programme sustainability. The end of donor funding usually means the end of whatever programme it was supporting. For example, over the last decade or so, Ethiopia has vastly increased expenditure on agricultural research with the help of donor financing. Public expenditure on agricultural research went up from around 0.75 percent of agricultural GDP (or 0.35 percent of GDP) in the late 1990s to 3 percent of agricultural GDP (or 1.3 percent of GDP) by 2002/03. However, donor funding (from the World Bank and the International Fund for Agricultural Development) accounted for 30–66 percent of this between 1998/99 and 2005/06, which raises serious questions about sustainability (Ethiopia case study).

Of course, spending more money on R&D does not necessarily guarantee better results. For one thing, even when the money is ostensibly used for R&D, it is often in practice spent on recurrent expenditures (such as wages and supplies) rather than on genuine investment, as in the case of Ethiopia (Ethiopia case study). Moreover, research could be poorly organized. For example, in Hungary under socialism, considerable resources were put into agricultural R&D, but the results were less than impressive partly because they were not mainly driven by consumer demands and partly because there was little international cooperation (Hungary case study). Similar problems were observed in Ghana, including the lack of coordination among research projects conducted by universities and other academically-oriented entities, the de-linking of research from the real world and the absence of links with extension services (Ghana case study).

Interestingly, India's experience shows that financial constraints need not totally bind. Despite spending relatively small amounts of resources in agricultural R&D (0.22 percent of agricultural GDP in 1980–1985 and 0.33 percent in 2002, compared with 0.49 percent in China or 1.3 percent in Ethiopia in 2002/03), India has managed one of the most comprehensive and successful publicly-organized agricultural research programmes in the developing world, not least because it deliberately learned from successful historical cases like the United States (see Box 6).

Of course, public research need not all be conducted by national governments. Ghana has done little research on rice, but has collaborated with research institutes in neighbouring countries, such as the International Institute for Tropical Agriculture (IITA) in Nigeria and the West Africa Rice Development Association (WARDA) to import improved rice varieties (Ghana case study). The research behind the Green Revolution of the 1960s and 1970s was done with international public money for rice by the International Rice Research Institute (IRRI) in the Philippines (jointly founded by the Philippines government and the Ford and Rockefeller Foundations in 1960) and for wheat by the International Maize and Wheat Improvement Centre in Mexico (jointly founded by the Mexican government and the Rockefeller Foundation in 1943).

Extension services

Because they cannot be easily codified and written in instruction manuals, all technologies require technical support to some degree in their initial phases of dissemination (e.g. demonstrations, teaching how to use it, troubleshooting). However, technical support is particularly important in agriculture because it is necessary to adapt technology to the variations in climate and soil conditions in different localities. Therefore, agricultural technology transfer requires the presence of agents who understand the technologies and the local conditions; these “extension services” became particularly important in the nineteenth century with the rise of scientific methods in agriculture.

Box 6: Agricultural research in India

India started systematic efforts to develop agricultural technology at the beginning of the twentieth century. However, these efforts were given a fillip after India’s independence in 1947.

Three major organizational developments are noteworthy in this regard: the establishment of an apex organization, the Indian Council of Agricultural Research (ICAR), the establishment of state-level agricultural universities patterned after the United States’ Land Grant Colleges and the launching of All India Coordinated Research Schemes in commodities and farming systems. These three organizations complemented one another. The ICAR overviewed the research needs of the country and set the national research agenda. The agricultural universities took a more desegregated, regional view and integrated teaching and research to ensure a close liaison between basic scientific research and applied agricultural research. The All India Coordinated Research Schemes for commodities, located in different soil-climatic zones, enabled experiments to be conducted in different environments, providing cross-sectional results to scientists working on different aspects of a commodity.

The Indian Government also gave special attention to improving the working conditions of the agricultural scientists and raising their emoluments. An All-India Service of Agricultural Scientists was created, enabling scientists to reach top positions in the bureaucratic hierarchy, which earlier were the preserve of generalists in the Indian Administrative Service. This arrangement opened new avenues of promotion and accorded prestige and recognition to the agricultural scientists.

By the early 1960s, when high-yielding varieties of wheat and rice were developed in CIMMYT and IRRI, the agricultural research establishment in India was in a position to select, cross and adapt useful varieties. Studies made in the early to mid-1970s indicate that the annual rate of return on the investment in agricultural research was above 60 percent.

However, since the Green Revolution petered out in the 1980s, India’s large, well-trained, scientific workforce and its long tradition of systematic research have not been able to raise agricultural productivity to any measurable extent. Moreover, the cuts in the government research and extension budget, following the macroeconomic adjustment in the early 1990s reform, adversely affected agricultural research.

Lack of resources is only one of the problems facing the Indian agricultural research system. The 2006 report by the high-powered National Commission on Farmers presents a long list of problems, including:

- excessive emphasis on developing seeds;
- absence of research on “poor men’s crops” (e.g. coarse cereals and pulses) or non-grain sectors (e.g. horticulture, floriculture, sericulture, animal husbandry, forestry and fishery);
- failure to take sustainability seriously;
- lack of attention to economizing the use of costlier and/or scarce factors of production (e.g. fertilizers, irrigation water and farm energy);
- bureaucratic interference in scientific work;
- rigid and hierarchical organization of the scientific establishments;
- lack of coordination among different national and international research organizations;
- lack of coordination between research and extension;
- lack of involvement by the likely beneficiaries of the research.

In recent years, private research, mainly in high-quality seed production, has become important. However, its development also owes a lot to public intervention. The private sector has been given financial incentives (e.g. tax concessions on R&D expenditures and low import duty rates on equipment for R&D) and free access to public research products (e.g. plant varieties).

Source: India case study

The idea of extension services started in the United Kingdom in 1843 (Rothamsted), but Germany was the pioneer in widely implementing the idea. According to van Zanden (1991), “although the first agricultural experimental station had been set up in Rothamsted in 1843, it was the Germans who set the example in the organization of a more or less nationwide system of agricultural research and extension services, largely sponsored by the state” (p. 237). In contrast, Britain and France, despite their relatively advanced bases of manpower, did not really start agricultural extension services until World War I, which is one of the reasons why countries like Germany and Denmark, which provided better extension services, caught up during this period in terms of agricultural productivity.¹⁰

Like Germany, Sweden and Denmark used itinerant instructors to spread better agricultural technologies. In the Netherlands, a state extension service was developed in the late nineteenth century, alongside agricultural education (Ingersent & Rayner, 1999, p. 45). The government of the Netherlands introduced extension services in 1890, first in crops and then in horticulture and dairy production. Even though there were fewer than 40 agricultural consultants for the whole country (32 in 1907 and 36 in 1913), they supervised hundreds of experimental plots – only one in 1890, but rising to 809 in 1905 and 1 020 in 1910 (Knibbe, 1993, pp. 161-162).

The United States also took extension services very seriously. Economically more advanced states, like New York, set up extension services in the form of a farmers’ institute in the late nineteenth century (Colman, 1965, p. 43). In 1914, under the Smith-Lever Act, county farm bureaus were set up throughout the country to administer extension services, including farmer education and farm demonstrations (p. 45). Japan took the idea of agricultural extension even further – it had a much tighter link between research and extension than other countries and had an extension worker for every village (which typically had 100 or fewer farming households) (FAO, 1966, p. 28) (Box 7).

Unfortunately, extension services in many developing countries have been of poor quality. In many countries, they have been underfunded and poorly coordinated with agricultural research. During the 1980s and 1990s when the NCW was dominant, the few remaining extension services suffered from severe funding cuts (including cuts in salaries for extension workers, which made many qualified people leave the service) and diminishing affordability for small-scale farmers because the subsidy elements were cut or even totally eliminated.

The experience of Chile, which was a pioneer in implementing NCW policies in many (although not all) aspects of agriculture, clearly shows the limitations of the market-oriented approach to extension services. In 1976, the Chilean government privatized extension services. It provided special credits to former public employees, mainly extension officers, to set up private-sector extension firms. The scheme, which still exists today, provided a government subsidy of 80 percent for small-scale farmers. However, since farmers rarely pay the remaining 20 percent, the service providers tend to receive only the subsidy. The end result has been that the privatized scheme is covering the same number of farmers as before with equally low quality (Chile case study). More recently (around 1983), the limits to privatized extension service were recognized

¹⁰ In 1870, Germany had lower land productivity (i.e. production per hectare, in wheat units) and lower labour productivity (i.e. production per head, in wheat units) than both France and Britain. In 1910, its land productivity was higher than that in both of those countries and its labour productivity was higher than that of France (although not of Britain). In 1870, Denmark had lower land productivity than both France and Britain, while having higher labour productivity than that of both countries (although only marginally higher than that of Britain). In 1910, it had both higher land and labour productivities than France or Britain. See van Zanden (1991) for further information.

and a strong state-backed extension programme targeting medium-sized farmers was established, involving the National Agriculture Research Institute (INIA) and the National Institute of Agricultural Development (INDAP) (Chile case study).

Box 7: Agricultural research and extension in Japan

Japan promoted public research in agriculture very early, despite its relatively backward research capabilities. In 1885, the Japanese Government set up the Experimental Farm for Staple Cereals and Vegetables, which, in 1893, was renamed the National Agricultural Experimental Station. In 1899, many prefectural governments (at the time there were 47 of them) set up prefectural experimental stations with the help of subsidies from the central government.

What made Japan’s public research in agriculture particularly effective was the strong cooperation between the central and lower-level research stations, which enabled the country to develop technologies better suited to local conditions (FAO, 1966, p. 14) For example, promising varieties of wheat developed by the central experimental station were handed down to four regional stations, which then developed other varieties suited to the regional conditions. The regional stations would send these varieties to prefectural stations, which developed more varieties suitable for the local conditions. These varieties would be handed down to tertiary stations, which would then recruit experienced farmers to try the new varieties. Only when these trials were successful would the new varieties be widely distributed through the agricultural cooperatives. As mentioned in the 1966 report by the Food and Agriculture Organization of the United Nations (FAO), the fact that no single variety accounted for more than 10 percent of wheat output at the time is an illustration of the effectiveness of the system in encouraging local adaptation (p. 14).

Another factor that enhanced the effectiveness of public agricultural research in Japan was the close link between research and extension. In addition to conducting research, Japanese experimental stations also directed the extension activities of the agricultural associations and trained the technicians from the associations (FAO, 1966, pp. 15-16). In this way, farmers had quicker access to state-of-the-art technologies and the researchers got quicker and better feedback.

Extension service *per se* in Japan was established only in 1948, but “extension-type” activities date from the early Meiji period (FAO, 1966, p. 15). In 1880, the Department of Agriculture and Commerce instructed all prefectural governors to promote agricultural improvement societies. In 1881, the department appointed some outstanding farmers as teachers at Komaba Agricultural College (which became the School of Agriculture at Tokyo University). Other outstanding farmers were hired to tour the country to demonstrate improved techniques. In 1885, the “itinerant instructor system” was established nationwide. With the formal establishment of the Extension Service, extension activities got further impetus and by the 1960s, there was one extension worker per village (compared with one per county in the United States) (FAO, 1966, p. 28).

Sources: Sugihara, 1996 and FAO 1966

Ghana’s experience shows how privatization of extension services may put extension services beyond the reach of most farmers, not just financially but also geographically. When Ghana privatized veterinary services, all those who offered the services located themselves in urban areas, making it impossible for farmers in remote regions to use the services, even if they could afford them (Ghana case study). However, the case of horticultural extension services in Ghana (see Box 8) shows that even in countries with poor funding and lack of personnel for extension services generally, success in particular sectors is possible if resources are focused and if a programme is well-designed.

Box 8: Extension services for agricultural export sectors in Ghana

Extension services in general have been of rather poor quality in Ghana. They are poorly coordinated with agricultural research and suffered from lack of funding until the 1990s, when the country’s agricultural policy was run mostly according to the NCW. Today, there are 2 500 farmers per extension worker (compared with about 100 farmers in Japan in the 1950s and 1960s – see Box 7). The Ministry of Food and Agriculture’s desire to reduce this to 800 farmers per extension worker has been thwarted by a lack of budget.

However, Ghana has experienced considerable success with more specialized extension services for export-oriented agricultural sectors, although those experiences still reveal certain limitations of the NCW approach to agricultural extension.

The Ghanaian Government implemented a World Bank-funded Agricultural Services Subsector Investment Programme (AgSSIP) from 2001–2006. Influenced by the World Bank’s wish to increase private-sector participation in extension delivery, a tender system was organized and NGOs were selected initially to provide extension to farmers in five districts. However, since the selected NGOs had no permanent extension staff of their own, they poached staff from the Ministry of Food and Agriculture to carry out their mandate. Furthermore, the project collapsed after the end of AgSSIP for lack of funding. In 2004, the Ghanaian Government requested a restructuring of the original AgSSIP programme and added what came to be known as the “new initiatives”. These included rehabilitation of irrigation schemes, establishment of mechanization centres, development of fishing landing sites and the horticulture exports industry initiative (HEII).

The HEII, which promoted horticultural non-traditional crops such as pineapple, mango, papaya, chilli and Asian vegetables, was particularly successful. It provided appropriate seeds and other planting materials (such as MD2 pineapple suckers) and helped farmers source, test, propagate and multiply those materials. It also promoted food safety and quality management by publishing a list of acceptable pesticides for export products.

Following the success of the HEII, the government negotiated with the African Development Bank in May 2006 to design and implement another project, the Export Marketing and Quality Awareness Project (EMQAP), to further improve extension delivery in the horticultural industry. A variety of instruments are being used, including establishing demonstration farms, increasing production of MD2¹¹ pineapple suckers and quality seeds of other horticultural crops, training (e.g. for farm workers, extension personnel, seed inspectors and other private entrepreneurs and exporters’ associations), and developing materials to facilitate the training sessions (e.g. handouts, leaflets, CDs and video clips). The EMQAP also offers marketing support, including supplying free cold delivery vans for the pineapple exporters, branding Ghana in the international markets, providing equipment to the Ghana Standards Board to conduct residue analysis, and establishing cold chains in each of the regions covered by the project.

Source: Ghana case study

Education

Extension of new knowledge will be most effective when farmers are able to absorb new knowledge successfully and even make incremental improvements to it. This requires educated farmers (although the success of the Green Revolution in India in the 1960s and the 1970s, when the literacy rate was rather low, cautions us against overemphasizing formal education). Given

¹¹MD2 is a pineapple variety developed by Del Monte.

this, it is not surprising that public intervention in educating farmers (either through direct provision or subsidies) has played a crucial role in all agricultural success stories throughout history.

(a) General education

General rural education is the basis for improving farmers' productive capabilities. Denmark was a pioneer in this regard. It introduced eight-year compulsory schooling countrywide (between the ages of 6 and 14), following the 1814 Elementary Education Act. In 1849, primary education became free for poor children (Henriksen, 1992, p. 162). As a result, by 1870 the majority of the Danish rural population could read (Henriksen, 1992, p. 163). Since the 1840s, the Danish government has spread secondary education in the rural areas by encouraging Folk High Schools¹². In 1868, the state expanded access to secondary education even further by granting scholarships for Folk High Schools to poor students (Tracy, 1989, p. 111). Germany also introduced compulsory basic education in the late nineteenth century (Tracy, 1989, p. 103).

Today most developing countries recognize that education, including in rural areas, is important. For example, Viet Nam's Government has contributed considerably to the country's agricultural development through continued investment in rural education (Viet Nam case study).

(b) Specialist education

General education is not enough for agricultural development. Farmers often need specialized knowledge in agriculture to create a productive agricultural sector. In many of today's rich countries, agriculture was taught in general secondary schools in rural areas (e.g. in New York state in the United States) (Colman, 1965, p. 49). Many of them also established specialized agricultural secondary schools. In the late nineteenth century, Denmark created specialist agricultural schools, which ran for only the five winter months, and by 1914, 1 300 students (or 5 percent of the 20-year-olds) attended them (Henriksen, 1992, p. 163). Specialist agricultural schools were set up also in Japan (FAO, 1966, p. 16), Sweden and the Netherlands (FAO, 1950, p.8).

In many of today's rich countries, governments tried to improve farmers' knowledge even after they left school. In the second half of the nineteenth century in Germany, "considerable development of agricultural education occurred at different levels extending from universities to full-time agricultural schools and part-time 'winter schools'" (Ingersent & Rayner, 1999, p. 43; also see Blackbourn, 1997, p. 315). In the 1890s, the Dutch Government also introduced winter courses, providing 150–225 hours of education over one or two winter seasons; by 1920 these courses covered 5 percent of the farmers in the relevant age group (Knibbe, 1993, p. 163). Sweden also set up schools that educated farmers in the 1860s (Micheletti, 1990, p. 40). In the United States in New York, the state government supported the establishment of a farmers' institute and a winter dairy school (Colman, 1965, p. 43). Even in France, which was a laggard in agricultural research and extension, most *départements* created winter schools in farming techniques by the first decade of the twentieth century, although attendance was limited to a few thousand pupils (Tracy, 1989, p. 78).

In many of these countries, the government went further and promoted agricultural studies in universities. The most striking example in this regard is the United States. After the Morrill Act of

¹² Folk high schools are secondary schools that are not part of the formal school system but are essentially "adult education institution" for those who missed out on secondary education. (As defined by Author).

1862, the United States set up land grant colleges, which were mandated to promote agricultural teaching and research (Lee, 1963; also see Ingersent & Rayner, 1999, p. 43). All land grant colleges were given public land in their states or the rights to public land in other states (if there was insufficient public land in their own states) to finance themselves. In New York, the agricultural college of a private university (Cornell University) was given a land grant and thus effectively “nationalized” (Coleman, 1965, p. 44).

The French Government, under Charles X, set up the Institution Royale Agronomique in 1826. The Danish Government established the Royal Veterinary and Agricultural College in 1858 (Ingersent & Rayner, 1999, p. 44). In the Netherlands, the first state agricultural school was set up in 1876 in Wageningen, expanded in 1906 to cover horticulture and forestry and subsequently granted university status in 1918 (Ingersent & Rayner, 1999, p. 45 and van Zanden, 1994, p. 185). In 1881, the Japanese Government’s Department of Agriculture and Commerce established Komaba Agricultural College, which later became the School of Agriculture at Tokyo University.

Specialist agricultural education does not receive the same kind of emphasis at the secondary and tertiary levels in today’s developing countries, largely because of the excessive emphasis that the NCW has placed on primary education. The experiences of the developing and transition countries studied by our project show how the failure to provide adequate education to farmers at these levels can hold back agriculture.

In Ghana, the austerity measures taken during the Economic Reform Programme (ERP), implemented in 1983, led to the collapse of the farm institutes that were training young farmers and the agricultural colleges that were training extension staff (Ghana case study). In Ukraine, the state’s withdrawal during the transition period led to a collapse in agricultural education and training. In 2000, Ukraine was training only 9.1 percent of tractor operators and 7.7 percent of drivers compared to the number of graduates in 1993 (Ukraine case study). Managers of agricultural enterprises with higher education fell from 90.5 percent in 1995 to 55 percent in 2001–2005. Our Ukraine case study bluntly concludes that “the processes of qualitative renewal of productive human capital almost stopped in agriculture”. This does not bode well for a sector that was just coming out of a major collapse – agricultural output in 1999 was 53 percent of the 1990 level, which, even after a 26 percent increase between 2000 and 2005, means that the 2005 output was only two-thirds of what it had been in 1990.

Information

Educating farmers raises their capabilities to use new knowledge. However, without the availability of good information, heightened intellectual capabilities cannot realize their full potential. Extension services are one means of providing such information, but there is also a need to provide information that is less technical than what one would normally expect from extension services.

In today’s rich countries during the late nineteenth and early twentieth centuries, one common method of providing better information to farmers was organizing agricultural fairs, where prizes were given to those who produced high-quality outputs and exhibitions presented new agricultural implements and inputs. Agricultural fairs in the United States are famous, but other countries (e.g. Japan and the Netherlands) also used them actively (FAO, 1966, p. 16). The Netherlands organized its first international agricultural exhibition in 1884 (Knibbe, 1993, p. 161).

Governments in these countries also provided information on weather, harvests and prices, and conducted censuses that provided detailed information about the state of the agricultural sector

(FAO, 1950, p. 10). In 1900, the Dutch Government set up an “intelligence service” on the harvest and the state of the crops (Knibbe, 1993, p. 164). The collected information was sometimes disseminated in an innovative and user-friendly way. The legendary BBC radio drama, the Archers, was started in 1951 in collaboration with the Ministry of Agriculture as a means to impart relevant agricultural information to farmers.¹³

In many developing countries today, the lack of good information is an obstacle to agricultural development. In Zambia, the lack of adequate price and other market information is considered to be one important reason for the underdevelopment of agricultural markets (Zambia case study).

4.1.3 Credit

Due to the seasonal nature of agricultural activities, farmers’ flows of incomes and expenditures are highly variable. For small-scale farmers with little capital, the availability of credit is crucial in being able to smoothly manage the production and consumption processes. If they are to raise productivity, credit is even more necessary to buy more marketed inputs (e.g. fertilizers, machinery) and possibly to invest in infrastructure (e.g. digging wells).

However, especially in the early stages of a country’s economic development, small-scale farmers have great difficulty in getting access to credit. They are exposed to high risks because of things like dependence on rainfall, exposure to crop and animal diseases (and the low availability of preventive measures and cures for them) and poor health for themselves and their family members. Moreover, at these stages of development, it is expensive to provide financial services in rural areas because of poor transportation and communications. Consequently, the private-sector financial institutions, where they exist, often refuse to serve the rural areas.

All this means that local moneylenders are able to exploit their monopolistic positions and charge the small-scale farmers usurious interest rates. Moreover, these moneylenders often have monopolistic and monopsonistic positions in other markets – they are often local landlords, grain merchants and oligopolistic suppliers of marketed inputs, all at the same time. This enables them to maximize their profits by manipulating the terms of their transactions with small-scale farmers who transact with them in more than one market.

For these reasons, providing credit to small-scale farmers has been one of the most important challenges facing policy-makers in the early stages of economic development. Various solutions were adopted by different countries, but typically specialized rural banks were established by the state or subsidized by it, rural lending requirements were imposed on public and private banks, and credit coops were promoted.

The NCW believes that, if left to the market, an adequate amount of credit will be provided to almost everyone in most circumstances. At best, it will concede that small-scale farmers may have risks that are too high for the private financial institutions to lend to them. It would argue, however, that the problem can and should be solved by encouraging the group-lending arrangements seen in currently fashionable microcredit schemes, without recourse to government-directed lending (to particular groups, including small-scale farmers) or subsidized interest rates. Consequently, the promoters of the NCW have pushed for the expansion of profit-seeking, private-sector financial institutions and some microfinance.

¹³ I thank Claire Melamed for pointing out this to me.

However, the result of these policies has been a reduction in small-scale farmers' access to credit, with negative consequences on their productivity. For example, in Ghana, the World Bank's insistence that sectoral allocation of subsidized credit to agriculture be abolished has caused all the major banks, except the state-owned Agricultural Development Bank, to move away from funding agriculture; Barclays Bank, one of the two largest privately-owned banks, closed down all its rural branches and the other largest private bank, Standard Bank, closed down its Agricultural Department at its head office (Ghana case study). While the private-sector banks in Ghana have more recently moved into microcredit, little of it goes into agriculture. Between 1997 and 2006, only 2 percent of commercial bank loans went to agriculture (Ghana case study).

Fortunately, the World Development Report (WDR) 2008 shows that the NCW has significantly changed its position on rural credit. WDR 2008 accepts that when it comes to agricultural financing "[t]he range of alternatives is broad" (p. 145). It explicitly acknowledges that "[g]overnment-sponsored agricultural lending institutions have been successful in many now-developed economies such as the Republic of Korea" (p. 145) and talks about the re-emergence of financial cooperatives as "promising institutions in rural finance" (p. 146). Its enthusiasm with microfinance institutions (MFIs) has also been tempered – WDR 2008 explicitly says that "MFIs cannot ... provide the mainstay of rural finance" (p. 145).

It is truly encouraging that the supporters of the NCW are revising their views on rural credit, although it will take some time for what the World Bank says in its intellectual reports to percolate down to field practices. As we shall see below, experiences show that it is crucial for the government to be significantly involved in providing agricultural credit. The simple fact is that without some subsidy elements and/or mandatory lending to small-scale farmers, private-sector financial institutions are not going to extend enough credit to them.

Specialized banks

One common method of providing agricultural credit, which also is often the most effective, is through specialized, publicly-owned – or at least publicly-supported – banks. Germany was the pioneer in this regard. Between 1824 and 1870 (with a peak in the 1850s and 1860s), German states (which were not yet unified) supported the establishment of about 30 mortgage banks (*Hypothekenbanken*), especially by granting them limited liability, which was not yet generalized (Friedriksen, 1894, pp. 62-3; Cecil, 1979, p. 12). Although they would lend for urban real estate as well as farming land, they helped farmers borrow in order to acquire land and invest in drainage and livestock (Friedriksen, 1894, p. 75). The Norwegian Government also set up a mortgage bank as early as 1851 (Sejersted, 1992, p. 70) and France (*Crédit Foncier*), Denmark and Sweden adopted the same kind of institution.

However, the ratio of mortgages to the value of property in Germany (approximately 50 percent) was much higher than in other European countries, suggesting that Germany's mortgage banking was more developed than others (Friedriksen, 1894, p. 75). Japan also followed the German model and established the Land Mortgage Bank (or Japan Hypothec Bank) in 1897, especially enabling financing for land improvement projects (Sugihara, 1996, p. 156).

The development of a rural credit system in the United States was slow compared with other countries, but finally it established the most coherent system, not least because it explicitly drew on the experiences of other countries that were more advanced in this regard, such as Germany, Sweden and Denmark (see Box 9).

Specialized agricultural or rural banks have been much used in developing countries throughout the post-World War II period with mixed results. This has prompted many people, especially the supporters of the NCW, to condemn such banks and, more broadly, the idea of subsidized agricultural credit. However, as the experience of Zambia shows (see Box 10), private-sector financial institutions are not much better at managing rural credit. Moreover, if they are properly supported, specialized agricultural banks can perform well. In Ghana between 1976 and 1990, 123 rural/community banks were established through partnership between local communities and the central bank (which initially held preferential shares of 50 percent in these banks but over time completely divested themselves). These banks have been performing well – as of March 2007, 103 of these 123 banks (or 84 percent of them) were operating profitably. Their success is greatly owed to the initial capital support, staff training and subsidized computer equipment provided by the central bank (Ghana case study).

Box 9: The rural credit system in the United States

Despite rapidly becoming the most economically advanced nation in the world, the United States lacked a good rural credit system until the early twentieth century, causing great difficulties for small-scale farmers and holding back further agricultural progress. In 1908, the Country Life Commission appointed by Theodore Roosevelt talked of “a lack of any adequate system of agricultural credit” (Cochrane, 1979, p. 289). Until 1913, national banks were not allowed to lend money on farm mortgages, so agricultural credit was provided by small state banks at high interest rates.

Finally, in 1913 national banks were allowed to lend money on farm mortgages. In 1916, the Federal Farm Loan Act created 12 Federal Land Banks to make long-term mortgage credit available to farmers on realistic terms. However, these banks did not lend to individuals but only to cooperative borrowing groups. In 1923, the Intermediate Credit Act created 12 Intermediate Credit Banks to make loans to co-ops and farmers’ associations, which were then to make loans to farmers. These banks were slow to take off, but became an important source of operating credit for farmers by the 1930s.

The most comprehensive reform came in 1933, at the height of the Great Depression and the farm crisis through the Farm Credit Act, which still forms the backbone of the United States farm credit system. The system included 12 land banks making mortgage loans, 12 intermediate credit banks making production loans, 13 banks making loans to co-ops and 12 production credit corporations to mediate between farmers and intermediate credit banks. The United States federal government subsidized the system by refinancing farm mortgage institutions other than the Land Banks and also cutting interest rates and extending the due dates for Land Bank loans. In 1935, the federal government introduced the Supervised Loan System for poor farmers, in which loans came with inputs and extension services: this was not very successful partly because the farmers lacked management skills.

In designing the system, the United States learned from missions it sent to Germany and Scandinavia: “Two commissions, one private and one appointed by President Wilson, went to Europe in 1913 to study agricultural credit and cooperation in Northern Europe” (Cochrane, 1979, p. 289).

Source: Cochrane, 1979, pp. 289-91.

India has also made considerable progress in delivering credit to small-scale farmers through a network of nationalized banks (India case study). However, with financial liberalization in the 1990s, the Indian banks started to shun the agricultural sector; the share of small loans in banks’ portfolios declined and the number of rural branches of public and private commercial banks stagnated, although they didn’t decline. As a result, the India case study concludes, “the role of

credit to empower the poor by enabling them to have access to goods and services which was a unique feature of Indian banking was for all practical purposes abandoned”.

Box 10: Zambia’s struggle to develop the rural credit system

Rural finance throughout Zambia’s post-independence history was a huge failure. Part of the problem is that it was linked too much to maize production to the exclusion of other farm and rural enterprises. This means that rural finance was merely a tool for increasing maize production, which was wrongly seen as the only way to attain household food security, at the neglect of other food crops such as cassava, mixed beans, sweet potatoes, sorghum and millet.

By 1994, it became clear that the system had become unviable, with the three lending institutions – Zambia Cooperative Federation Financial Services (ZCF-FS), Credit Union of Savings Associations (CUSA) and Lima Bank – owing the government a total of US\$85.2 million. Their recovery rates of 10 percent, 23 percent and 35 percent in the 1993/94 season gave little hope that these loans could ever be repaid. The government gave up on these institutions and sought to provide credit through private institutions such as SGS Limited and Cavmont Merchant Bank between 1994/95 and 1996/97.

However, the recovery rates by the private-sector banks were equally disappointing, with none of them exceeding 40 percent. Given these disappointing results, the government opted not to be further involved in providing fertilizer credit in the 1997/98 season. In the 1998/99 season, the government delivered fertilizer credit through the Food Reserve Agency (FRA) which subcontracted a private company to distribute it to 150 depots across the country.

The underperformance of rural credit institutions in Zambia led to a decline in the number of smallholder farmers who received credit from 13.2 percent in the 1993/94 season to only 7.5 percent in the 1997/98 season. The emergent commercial farmers were the hardest hit – the proportion of commercial farmers receiving credit declined from 40.7 percent in the 1993/94 season to 22.8 percent in the 1997/98 season. Because much of the credit was linked to farm inputs, particularly maize hybrid seeds and fertilizer, there was a significant drop in the number of farmers accessing these inputs. After 1999, rural credit was playing only an insignificant role in stimulating agricultural production.

The Zambian Government has nevertheless continued to search for a way of revitalizing rural finance. Smallholder Enterprise and Marketing Programme (SHEMP), Zambia Agriculture Technical Advisory Centre (ZATAC) and Cooperative League of the United States (CLUSA) have developed a range of instruments to help small-scale farmers access credit, including the discounting of warehouse receipts, loan guarantees, inventory receivable financing and export-credit financing. More recently, promoting outgrower schemes is seen as a way to help small-scale producers access input advisory services. In 2005, a rural finance programme to be funded by the International Fund for Agricultural Development (IFAD) was designed to run for seven years.

Despite this progress in improving access to short-term working capital, producers still have difficulty accessing long-term financing. The lack of long-term financing is a particularly serious problem for coffee, which takes about four years to mature. There is no long-term financing suitable for coffee growers at the moment.

In response to this problem, the European Investment Bank (EIB) and the International Development Association (IDA) have made available through commercial banks long-term financing whose repayment period could last up to seven years. However, until 2005, both funds were undersubscribed due to the conditions attached to the loans.

Source: Zambia case study

As distant and recent historical examples show, subsidized credit does not guarantee agricultural success; however, agricultural success without it is impossible to achieve. The case of Zambia

(see Box 10) clearly attests to this. Even Chile in the 1980s, when the country was very rigidly following the NCW, provided subsidized credits to small-scale farmers through the National State Bank and INDAP, an agency that was created in the early 1960s to help small-scale farmers (Chile case study). These credits were provided at positive real interest rates, but at reasonable levels (i.e. 7 percent per year), with repayment periods in accordance with the agricultural production cycle.

Support for credit cooperatives

Improving small-scale farmers' access to credit does not have to involve state provision or subsidies. Historical examples, especially in today's rich countries, show that this can be done through cooperatives. Credit cooperatives are not to be confused with microfinance institutions, even though they both involve group responsibility and solidarity. Microfinance institutions, unlike credit cooperatives, are run on profit motives and often charge interest rates – at 70 percent, 90 percent or even higher – that only can be described as usurious.

The agricultural cooperative movement emerged spontaneously in today's rich countries (with the exception of Japan) in the late nineteenth century (see Box 11). There were many different types of co-ops providing activities like joint marketing, joint production, joint input purchase, irrigation and drainage, product quality control, timeshare for machines and credit. Denmark was a pioneer in marketing and production co-ops, while Germany led the way in the development of credit co-ops.

Cooperative banks first emerged in Germany in 1864 in response to the tendency of the *Hypotheekenbanken* to lend only to large farms (Tracy, 1989, p. 103; see Box 11 for further details). The idea quickly spread to other countries and their governments started supporting them.

Credit co-ops spread in Denmark and Norway from the 1880s (Henriksen, 1992, p. 162 on Denmark and Sejersted, 1992, pp. 70-1 on Norway). In Denmark, they provided 46 percent of total mortgage loans by 1901 (Henriksen, 1992, p. 162). In France, a law was passed in 1894 to support agricultural credit co-ops. In the Netherlands, the first cooperative bank was founded in 1896 and by 1910 there were 600 such banks, with 50 000 members. By 1920 membership tripled, with a cooperative bank in almost every municipality (Knibbe, 1993, p. 150). In 1915, the Swedish Government started to support credit co-ops, known as agricultural banks (*jordbrukskassor*), which specialized in providing operating credit (Ytterborn, 1938, p. 196). As discussed earlier (see Box 9), the United States Government also started to lend to credit co-ops at special rates from the early twentieth century. Japanese and other East Asian cooperatives also played an important role in supplying credit to small-scale farmers (Francks et al., 1999).

Some developing countries, notably India, have promoted credit cooperatives, although with less success than the rich countries mentioned above. For example, the Indian central bank (the Reserve Bank of India) disbursed funds in concessionary terms to cooperatives, which delivered credit efficiently, especially in the Punjab, Bombay, and Madras areas (India case study). Since the 1990s, the Ethiopian Government has supported the formation of cooperative banks (Ethiopia case study). Ghana's innovative rural banks, which are owned half by the local community and half by the government, are an interesting hybrid of state-owned banks and credit cooperatives (Ghana case study).

Box 11: A brief history of cooperatives

The first successful co-op was Britain's Rochdale Society of Equitable Pioneers, founded in 1844. A group of 28 weavers and other artisans in Rochdale set up the society to open their own store selling food items they could not otherwise afford. The idea developed into agricultural co-ops in Germany and Denmark.

Germany was a pioneer in credit co-ops. In 1864, Friedrich Wilhelm Raiffeisen set up cooperative banks, which later came to be known as Raiffesisen cooperative banks after the founder's name, in response to the tendency of the state agricultural bank, or the *Hypothekenbanken*, to lend only to large farms.

Denmark was particularly successful with co-ops (Tracy, 1989, pp. 113-4). Credit co-ops emerged in the 1850s and retail co-ops in 1866. Co-op development in agriculture was facilitated by the transition to livestock production, which necessitated arrangements for rapid and efficient processing and marketing that were beyond the means of the individual small producer. Co-op dairies emerged in 1882 and co-op bacon factories in 1887. Egg export co-ops were started in the 1890s (starting date unclear) and, after the Great Depression, the government subsumed export marketing cooperatives and ran state export boards (Murphy, 1957, pp. 367-8). In addition to product co-ops that helped with processing, marketing, input purchase and machine timeshare, there were also co-ops for irrigation and drainage. The idea spread to all other countries, but Japan developed the generalized co-op that served multiple purposes and thereby better coordinated its activities.

Sweden developed its co-ops almost as early as Denmark, but it was less successful (Ytterbon, 1938, pp. 186-7). The first co-ops emerged in the 1880s in the form of creameries, but they took off only in the 1890s. The 1890s also saw the emergence of input-purchasing co-ops, modeled after the German and Danish ones. In 1899, meat packing house associations emerged, modeled after the Danish ones. In 1915, state-supported credit co-ops (*jordbrukskassor*) were founded. However, up to the 1930s, co-ops developed slowly. The success of co-ops in Sweden was limited by: poor research; lack of standard by-laws, standard accounting, a uniform control and audit system; insufficient paid-in capital; lack of managerial competence; lack of a nationwide marketing plan; the near-absence of informational activity and training; and destructive competition among co-ops. In light of this, the General Agricultural Society of Sweden (the association of co-ops) was reorganized in 1929 to promote collaboration for the cooperative movement (pp. 187-8). The Swedish Government provided financial support for this effort (p. 194).

Co-ops were even slower in developing in the United States. The earliest success was the so-called Grange, or the National Order of the Patrons of Husbandry, which was founded in 1867 (Ingersent & Rayner, 1999, p. 59). It played an important role in getting concessions for rail freight rates in some states in the 1860s and 1870s, getting Cabinet status for the USDA in 1889 and establishing the Hatch Act in 1887 which established the state-level agricultural experimental stations. However, governmental legal support for co-ops was rather slow in coming, unlike in other countries. It was only in the early twentieth century that state laws started to support co-ops in the United States (Ingersent & Rayner, 1999, p. 60). The most important federal legal support came through the 1922 Capper-Volstead Cooperative Marketing Act, which exempted co-ops from anti-trust laws and provided co-ops with income tax privileges.

Japan perfected the co-op idea by developing generalized, rather than specialized, co-ops and using them effectively as an arm of the state (FAO, 1966, pp. 22-5). A law in 1900 authorized co-ops for credit, marketing and purchasing. Initially, credit co-ops were not allowed to do other things, but this restriction was removed in 1906. It opened the way for the development of general purpose co-ops, which are more suited to developing countries because, according to FAO (1966), "they are economical of management and permit a large and more economic scale of operations than would be possible with single-purpose co-ops" (p. 23). The Japanese Government backed their development with legal provisions for warehousing services (in 1919), a national purchasing federation (in 1923) and a central bank for co-op associations (in 1923) (p. 23).

The Japanese co-ops were initially more focused on credit, but by 1920 production co-ops were well-established in selling silk cocoons (more than half of national silk cocoon sales), purchasing fertilizer, distributing grain and warehousing. By the 1930s, co-ops were entrenched as credit agencies (following the bankruptcies of local private banks) and they also channeled government subsidies. However, until World War II, co-ops were dominated by landlords and large-scale farmers and permeated by merchants.

Genuine co-ops for small-scale farmers started after 1947, when the official wartime agricultural associations were dissolved and co-ops were re-established. Unlike before the war, only farmers could become members, which eliminated the influence of the merchants. After this, co-ops really took off and by 1957 co-ops covered every village with sub-branches in each hamlet. In 1956, 50 percent of farm credit came from co-ops (compared with 3 percent in 1914), and this represented 70 percent of institutional farm credit, as many credits were individually organized. Interest rates in 70 percent of the cases, however, were higher than bank rates (FAO, 1966, pp. 24-5).

4.1.4 Physical inputs

Government involvement is needed in providing key physical inputs to agriculture for a number of reasons. First, some of the inputs, such as canal irrigation and transport infrastructure (e.g. roads, railways and, increasingly, airports in countries that export horticultural products) have public goods characteristics and they will be underprovided if left entirely to the private sector. In this case, public provision is the obvious solution, although public-private partnerships, pioneered by Sweden for its irrigation development, should also be explored.

Certain inputs, such as deep-well irrigation and agricultural machinery, may not be public goods but providing them requires significant investments that are beyond the financial means of most farmers. If small-scale farmers with little capital are to use these inputs, they would need state support such as the ability to lease state-owned machines and equipment, state-mediated access to credit to purchase the inputs or subsidies to lower the prices.

Even purchasing divisible inputs that are not subject to problems of public goods or heavy investments – such as fertilizer and other agrochemicals, animal feeds and seeds – may require government involvement. The seasonal nature of agricultural production and the lack of private-sector credit may make even these inputs unaffordable for poor farmers. Even if the farmers have the money to buy these inputs, it may be necessary for the government to maintain product quality standards, as consumers have difficulties ascertaining the quality of inputs even after use.

The NCW does not entirely oppose public involvement in providing some physical agricultural inputs, especially the ones with public goods characteristics (such as transport infrastructure and large-scale irrigation). However, it is very wary of state involvement in providing physical inputs such as fertilizer and seeds.

Whatever the NCW's theoretical position on this issue, in practice, adhering to the NCW has resulted in severe reductions in the use of all types of agricultural inputs. The NCW policies led to a drop in government spending in agriculture, especially in long-term investments in transport and infrastructure whose impacts are slow to show. Partly, this was due to macroeconomic policies, such as a requirement for a balanced budget and excessively contractionary macroeconomic policies that reduce output and thus government revenue. It was also partly because of trade liberalization, which had detrimental effects on government revenue, especially in the poorest countries that relied heavily on tariff revenues. Our case studies show that countries like India and Ghana saw declines in infrastructural investment after the adoption of NCW policies.

The withdrawal of the state has created severe problems in many developing countries even for physical inputs that are private goods, which the NCW thinks can be better provided by the private sector. In some cases, the private sector simply did not show much of the expected supply-side responses. For example, after liberalization in the 1980s in Ghana, private suppliers in the seed markets simply did not emerge. Even when there were private-sector responses, profit-making has made these services inaccessible to disadvantaged farmers. For example, in Zambia, liberalization of seed and fertilizer markets has led to the emergence of some private-sector suppliers, but they do not serve remote areas that are not profitable. In Ghana, some private fertilizer suppliers and tractor services have emerged, but their prices are too high for most farmers.

Irrigation and related services

In most countries, irrigation is most important for reliable agricultural production. Although not all irrigation schemes (e.g. wells) are of a public goods nature, many of them are and this means that government provision and/or subsidization is necessary. Moreover, in organizing large-scale irrigation projects (e.g. canal irrigation), the government's ability to override individual or sectional interests and/or to rearrange property rights is particularly important. Otherwise the transaction costs of organizing such projects might be prohibitive. It is therefore not surprising that in all agricultural success stories, the government has played a key role in providing irrigation infrastructure.

The methods of financing, construction and management for irrigation projects have included different combinations from the public sector, private sector and co-ops and have differed across countries and times.

In France, the centralization of power after the revolution enabled the government to strongly promote the development of irrigation. "After the Revolution the central administration not only had the power to provide promoters of irrigation with the property rights they needed, it also had the power to enforce contracts." (Rosenthal, 1990, p. 632). The French Government sorted out property rights disputes that blocked the progress of irrigation projects and provided engineering advice and administrative oversight, although it provided very few subsidies to irrigation (p. 632).

In Sweden, public-private partnerships developed early to provide irrigation and drainage. This cooperative relationship later provided a template for developing other infrastructure, such as railways, telegraph, telephone and hydroelectric power in the late nineteenth and early twentieth centuries (Chang, 2002, p.40).

When modern irrigation started in the United States in the mid-nineteenth century, state governments (especially those in the west, where irrigation was crucial) initially helped develop irrigation by setting up "irrigation districts" – public or quasi-public corporations that could override individual rights for the sake of the irrigation projects (Fuhrman, 1949, p. 965; Teele, 1926, p. 435). Subsequently, the increasing scale of irrigation projects prompted the federal government to subsidize irrigation projects and to take them up itself, following the 1902 Reclamation Act (Fuhrman, 1949, p. 966; also see Gras, 1925, p. 392 and Selby, 1949, p. 964).

In Canada, the government hired American irrigation experts to make the prairie lands of Alberta attractive to settlers because it feared that the United States might try to annex the region (Lee, 1966, p. 272). However, this scheme, built from strategic considerations, was not successful and so the government reformed the system in 1894. It consciously imitated the American model (with some Australian elements), especially the centralization and nationalization of water resources (Lee, 1966, pp. 272-3, p. 279). It is interesting to note the similarity between this and the French experience after the revolution.

The Japanese Government invested heavily in irrigation. However, its management was much more decentralized than in the United States or Canada. The management of irrigation projects was often delegated to village associations – a practice that was transferred to Korea through Japanese colonialism in the first part of the twentieth century (Francks *et al.*, 1999, p. 26).

In the developing world, the success of Mexican land reform under President Cardenas (1934-1940) and the agricultural growth in the subsequent period owed a lot to public investment in agriculture. Between 1934 and 1950, public investment in agriculture, mainly in big irrigation

works, grew at the rate of 17 percent per year.¹⁴ As a result, value added between 1940 and 1958 rose by 5.8 percent per year in agriculture as a whole and by 6.8 percent per year in the crop sector (Mexico case study). However, critics note that the excessive subsidization of water led to its excessive use (p. 11).

Between independence and the Green Revolution, the Indian state financed, built, and managed all major irrigation projects and most medium-sized ones. The productivity of these projects was relatively limited before the Green Revolution due to the absence of water-responsive seeds; however, they enhanced the equality of access to water across regions and classes (India case study). It goes without saying that irrigation investments more than paid for themselves during the Green Revolution with the advent of water-responsive seeds. However, the reduction in government investment in agriculture in the 1990s resulted in the relative shrinkage of areas covered by surface irrigation and the expansion of groundwater irrigation, which only richer farmers can afford. This has resulted in greater inequality in access to water (India case study).

Chile's recent success in exporting "Mediterranean" products was the result of public intervention in irrigation. Even the free-market Pinochet Government provided irrigation subsidies, but the first democratic government of 1990 gave a big push in irrigation. It started constructing large irrigation works (none had been built during the Pinochet Government), assisted private farmers in rehabilitating and expanding existing irrigation schemes and implemented new medium-scale projects. It also gave special impetus to the existing subsidy scheme for small works at the farm level (Chile case study). In addition, it provided special financing to small-scale farmers so that they could commission feasibility studies and execute their irrigation projects (Chile case study).

In contrast, the declining share of public investment in agriculture going to irrigation (including drainage) in Egypt in the 1980s is considered to have been a major reason behind the falling growth rate of the agricultural sector during that period (Egypt case study). What our Ethiopia case study describes as the "trivial" amount of resources going into irrigation is generally agreed to have been a great obstacle to agricultural development in the country (Ethiopia case study).

Transport

Rural transport (e.g. roads, canals, railways and, increasingly, airports) is crucial in incorporating the agricultural sector into the broader economy. In Europe in the nineteenth and early twentieth centuries, there is even some evidence that differences among countries in productivity was due to the degree of commercialization (in which transport plays a crucial role), rather than the use of modern inputs (such as chemical fertilizers) (van Zanden, 1991).

Transport infrastructure is an area in which the role of the government is recognized, even by many supporters of the NCW. Many transport projects have a public goods nature, require large investments for their construction and also need coordination (in their operations and construction) across projects because of their "network" nature. These are characteristics that usually make state provision or subsidization more efficient.

Even the relatively inactive French state of the late nineteenth and early twentieth centuries (it was one of the most *laissez-faire* states during this period) invested in building rural roads and railways (Tracy, 1989, p. 78). The Swedish state, using the public-private partnership developed

¹⁴ During this period, public investment as a whole grew at 12.2 percent per year, a huge acceleration compared with the rate of 1.6 percent seen from 1926–1934 (Mexico case study).

through the irrigation projects, built trunk lines and allowed the private sector to build branch lines under government license and (after 1882) price controls (Chang, 2002, p. 40).

The United States Government made possible the development of railways in the agricultural west by granting the railway companies free public land. The Grange (or the National Order of the Patrons of Husbandry), the farmers' union that was founded in 1867 and was influential in the late nineteenth and early twentieth centuries, pressured some state governments into passing legislation to reduce railroad rates. The Grange also played a key role in passing the federal Interstate Commerce Act of 1887, which provided the basis for controlling passenger and freight rates across the nation (Cochrane, 1979, p. 283; on the Grange, see Ingersent & Rayner, 1999, p. 59).

Our case studies reveal that road and railroad links (and increasingly air links in the case of horticultural products) are also critical for agricultural development today. The Ghana case study estimates that “about 70 percent of agricultural marketing costs are directly attributable to the poor state of the feeder road network”. In Zambia, because of the poor state of roads and railways and the country's size and land-locked nature, it is estimated that “transport-related costs constitute 17.1 percent of [the country's] total value of exports” (Zambia case study).

Road building also offers a good vehicle for using surplus labour in low seasons (e.g. Korea used this extensively in the 1970s through its famous Saemaul, or New Village, Movement) or for creating food-for-work programmes (e.g. India).

Electricity

Electricity helps agriculture by providing it with the power source to run small machinery needed for cultivation (such as water pumps). It also promotes the development of rural industries that increase value-added components and create non-farm employment – for example, by helping to develop an agricultural processing industry by providing a power source for machines and refrigeration facilities. However, electrification typically requires large investments and centralized coordination because of the networked nature of the electricity supply. These characteristics have made it a natural candidate for state involvement.

From the late nineteenth century, electrification of the countryside has been an important project for all governments interested in rural development. The spirit of that time is summarized in Lenin's famous quote: “Communism is Soviet power plus the electrification of the whole country”.

Of course, this does not mean that development of an electrical supply can be done only by the state. For example, Sweden used the public-private partnership, originally developed through irrigation schemes, to develop hydroelectric power in the late nineteenth century (Chang, 2002, p.40).

Today, electricity is becoming even more important for agricultural development, especially with the rise of global food and other agricultural export chains that require a reliable supply of electricity for refrigeration and freezing. However, different countries have had different degrees of success with rural electrification.

Ghana's Government embarked on a Rural Electrification Project in the 1980s to help with rural industrialization and the creation of rural non-farm employment, with less-than-impressive results (Ghana case study). The Mexican Government also invested a lot in rural electrification, but the

fiscal adjustment of the 1980s severely arrested the process (Mexico case study). In contrast, Viet Nam has rather successfully electrified its rural areas through a combination of investments by the state and the relevant local population (Viet Nam case study).

Seeds

It goes without saying that better seeds are critical in raising agricultural productivity. The effectiveness of some other modern inputs also critically depends on the nature of seeds. For example, the effectiveness of better irrigation and increased fertilizer use was enhanced during the Green Revolution, because the new seeds were highly responsive to water and fertilizer.

Throughout history, public intervention has played a critical role in supplying better seeds. Better seeds have been developed in all of today's rich countries, often through public research. For example, the Japanese Government organized and financed an elaborate multi-layered system of seed development and dissemination, which enabled the country to develop seed varieties that suited different local conditions (see Box 7).

Public interventions in the production and distribution of seeds have been common in today's developing countries. Governments have provided or subsidized research for better seeds. The Philippines Government and the Mexican Government joined forces with international non-profit foundations (i.e. Ford and Rockefeller) to develop high-yielding varieties of rice and wheat. The Egyptian Government has also been deeply involved in the development, multiplication, importation and distribution of seeds (Egypt case study).

Once produced, improved seeds have often been disseminated at affordable prices through government-run extension services or government-supported cooperatives. Distribution of seeds through state agencies, however, has not always been successful, so the NCW has argued for privatization and/or liberalization of these services. Unfortunately, this solution has often not worked, especially for financially disadvantaged farmers and/or for those who are in remote areas, because serving them is not profitable.

For example, in Ghana, the inefficient state-owned enterprise, Ghana Seed Company, which had taken over the responsibility from the government of supplying improved seeds at subsidized prices in the mid-1970s, was abolished in the 1990s. However, this has not led to the expected emergence of private seed producers, despite the supply of "breeder seeds" from the government (Ghana case study). Although liberalization of the seed market did improve the seed supply in Zambia and India, small-scale farmers and farmers in remote areas were excluded (Zambia case study and India case study).

Fertilizers

The importance of fertilizer in modern agriculture cannot be overemphasized. However, small-scale farmers, especially in poor countries, use suboptimal amounts of fertilizer for a number of reasons (Ethiopia case study).

First, they are often not fully aware of the importance of fertilizers in increasing output. Second, even if they knew fertilizers were useful, they often do not have access to the credit needed to buy them. Third, small-scale farmers tend to operate on the margins of subsistence, so they are often not willing to take the risk of spending money for fertilizers because they are not sure that they will eventually earn enough money to recoup the costs, especially when the lack of irrigation makes output dependent on the vagaries of the weather. Fourth, they often do not take into

account the long-term implications of adequate fertilizer use in maintaining soil fertility. Moreover, even when they know the importance of maintaining soil fertility through regular replenishment of soil nutrients, they are often too poor to care about the long-term consequences of their actions.

In many of today's rich countries, governments subsidized fertilizers and/or promoted their use through extension services in the past. In the long run, fertilizers are likely to be even more successful if they are combined with fertilizer-responsive crop varieties, as seen in Japan and Korea (Sugihara, 1996, p. 156 on Japan; Francks *et al.*, 1999, p. 138 on Korea) or in India (see India case study).

Another fertilizer policy that is not widely discussed despite its potential importance is public regulation of fertilizer quality. Because farmers cannot know the quality of fertilizer before its use and because its quality cannot be easily ascertained even after its use (because there are too many intervening variables), there is great opportunity for fraud in the fertilizer market, especially when the producers do not have recognizable brand names. Given this, some governments tried to impose quality standards or even supply fertilizer themselves, in an attempt to assure quality. For example, the New York State Government imposed quality standards on fertilizers in the late nineteenth century (Colman, 1965, p. 42), while Korea produced fertilizer in state-owned companies.¹⁵

The NCW has taken the opposite approach in fertilizers to the one taken by today's rich countries. For example, the Ghanaian Government was forced by the World Bank and the IMF through the ERP conditions to abolish subsidies for fertilizer and other agricultural inputs and privatize its importation and marketing. The result was rising prices, which put fertilizers beyond the reach of most farmers, and falling imports (because the private sector was not interested in unprofitable ventures) (Ghana case study). In Hungary, cuts in fertilizer subsidies during the transition period resulted in average fertilizer consumption falling from 200–220 kg per acre in the 1980s to 50 kg per acre in 2001. When combined with a drastic decline in the use of irrigation (by 50 percent), crop yields fell to the level of the 1970s (Hungary case study).

In contrast, the Viet Nam Government's supply of subsidized fertilizers (as well as irrigation and machinery) is thought to have enormously contributed to the development of agricultural productive capabilities in poorer regions (Viet Nam case study). Viet Nam is also interesting in that it managed to improve the efficiency of fertilizer distribution in the 1980s through increased competition among SOEs, rather than through privatization and liberalization, as the NCW recommends (Viet Nam case study). The recent experiences of Malawi and Tanzania also highlight the importance of increased fertilizer use in many developing countries (see the discussion in the Ethiopia case study).

Machinery

Quality control is less of a problem with farm machinery than with fertilizers, because it is relatively easy to see the quality of the product soon after the purchase and machinery tends to be manufactured by large firms with recognizable brand names. The problem with machinery is that its purchase is often way beyond the means of individual small-scale farmers. As a result, co-ops have been used to jointly purchase farm machinery and rent it out to individual farmers in

¹⁵ Animal feeds have the same quality control problem and could benefit from similar government regulation. The New York State Government imposed quality control for animal feed in the late nineteenth century (Colman, 1965, p. 47).

countries like Germany, Denmark, Sweden and the Netherlands. To the extent that these governments gave financial help to the co-ops, they at least implicitly encouraged the practice through public policy.

In the 1970s, Ghana's Government subsidized tractor services by 50 percent or more, but this collapsed during the economic crisis in the early 1980s because a shortage of foreign exchange restricted the country's ability to import necessary spare parts. The private sector failed to fill the vacuum because there were few firms offering the service and, where available, the rates were prohibitive (Ghana case study). Recognizing the problem, the government began in 2008 to re-establish mechanization centres in partnership with private firms, with a view to pulling out after three years.

In contrast, the private sector in Egypt, at least since the 1980s, has played an active role in providing hire services for farm machinery. However, the public sector has still played an important role in increasing the use of farm machinery by providing relevant research and extension services through the Agricultural Engineering Research Institute (Egypt case study).

4.2 Outputs Policy

4.2.1 Measures to increase farm income stability

In the earlier stages of development, farm incomes tend to fluctuate more violently than at later stages. At earlier stages, a lack of irrigation increases the exposure to the vagaries of weather. The lack of chemicals to control crop diseases (e.g. pesticides, fungicides) and animal diseases (e.g. vaccines, antibiotics) means that there are greater risks of output failure. Price fluctuation is magnified at the earlier stages of development because farmers are less capable of diversifying (because of deficiencies in education, extension services and market information). In the earlier stages of development, price fluctuation is often exacerbated by the lack of even relatively "simple" things like warehousing facilities, which force farmers to sell soon after harvest time, creating an unnecessary glut in the market.

If farm incomes fluctuate more in the earlier stages of development, the consequences are greater too. At those stages, many farmers earn incomes that are sufficiently close to the subsistence level that any significant fluctuation in their incomes can push them into serious poverty. This has long-term consequences for poverty and productivity, as has been repeatedly pointed out throughout this report. Irreversible negative consequences for long-term productivity growth – for individual farms and for the agricultural sector as a whole – include the loss of assets through "distress sales" and hunger and malnutrition (especially because many small-scale farmers are net buyers of food) that harm family members' (especially children's) long-term productivity and interrupt children's education.

Moreover, farmers often need to have reliable future income if they are to invest in expensive, modern inputs; therefore, high fluctuation in incomes tends to discourage productivity-enhancing investments. Our Ethiopia case study points out that price fluctuation (especially price collapses in good years) have been one of the main obstacles to adopting improved technologies in the country.

For these reasons, most governments have adopted policies especially (but not exclusively) in the earlier stages of development that are meant to reduce the fluctuations in farm income. Examples

include price stabilization schemes (through price controls, buffer stock management and warehousing facilities), providing and/or subsidizing agricultural insurance, trade protection and direct income support.

The NCW recognizes that farm income stability is important. However, it believes that liberalization is usually the best solution to achieve this. They point out that developing microfinance markets can help small-scale farmers smooth their consumption, thus enabling them to avoid falling below the critical income threshold. They also argue that income fluctuations can be smoothed out by liberalizing markets for crop and livestock insurance. Greater liberalization of output markets, especially trade liberalization, they contend, will create “thicker” markets with more buyers and sellers, where individual actions will have smaller effects and prices will fluctuate less. The international rice market is frequently cited as a case where more countries liberalizing their trade will result in greater volumes being traded and thus fewer and less dramatic price fluctuations.

These market-based measures to increase income stability can work in theory, but the practice has often been different. Smoothing consumption through credit comes at a high cost, even if the credit is offered not by moneylenders but by microcredit schemes, because their interest rates are very high. Moreover, even the proponents of the NCW acknowledge today that microfinance is unlikely to be the mainstay of rural finance.

Insurance is better than consumption-smoothing credit, but it is unlikely to work without some government help. There is the problem of adverse selection, where high-risk customers have a greater incentive to take out insurance. Given the high risk that poor farmers face in developing countries, private sector insurance companies are unlikely to enter the market. This is why the government in countries like Japan and Germany had to subsidize agricultural insurance in the late nineteenth and early twentieth centuries.

While concerted trade liberalization across countries may reduce price fluctuations, greater liberalization also comes at a cost. When trade shocks are large, liberalized trade may expose poor countries to unacceptable levels of risk, as the recent food price hikes have shown. It is for this reason that many European countries reintroduced agricultural tariffs and quotas in the late nineteenth century, when New World and, to a lesser extent, Russian and Ukrainian imports dramatically increased because of the development of steamships, refrigeration and railways.

Price measures

The most frequently adopted measure to stabilize farm income is price stabilization through government price-setting and stockpile management. Governments provide price floors by guaranteeing to purchase unlimited quantities of certain agricultural products (such as key foodgrains, but also other things like oilseeds, as in Chile) at pre-announced prices. Such programmes were used in countries like Japan, where the government heavily intervened in the agricultural sector and the rest of the economy, and in countries like Chile, where government intervention in the agricultural sector was more circumscribed.

In many countries, price floors were combined with price ceilings, which were meant to protect vulnerable consumers, including many small-scale farmers who are net buyers of food. Chile operated a price band system, where if an import price is below the “floor” price, a variable levy

is imposed on imports while if it is above the “ceiling” price, existing tariffs are reduced to reduce the impact on consumers.¹⁶

A classic 1966 report on Japanese agriculture by FAO describes Japan as “possibly the first country in the world to attempt the systematic price stabilization of staple farm products for domestic consumption” for its 1921 measure to stabilize the price of rice (p. 21). Through the Rice Law of 1921, the Japanese Government was “empowered to buy rice when prices were low (within a financial ceiling on purchases) and to sell when prices were high” (p. 21). However, in the face of fast-growing imports from its colonies such as Korea, government purchase proved inadequate, so the Rice Control Law of 1933 provided more comprehensive power by establishing “minimum and maximum prices for rice (taking into account estimated production costs, general price trends and the cost of basic foods, etc.)” and permitting “unlimited purchases at the floor price” (p. 21). FAO assesses that the attempt to maintain prices in a period of surplus, primarily because of the growth of imports, “was not wholly successful, though it probably slowed down the fall in prices” (p. 21).

However, FAO points out that once the Japanese Government started to tightly control the quantity of imports from about 1940, the measures became more successful (p. 21). However, the success depended on the nature of the product involved. FAO (1966) evaluates that “[f]or rice, the price stabilization scheme appears to have worked satisfactorily and to have stimulated output”, although “for wheat which enjoys no particular consumer preference over the imported product to offset the higher domestic price, and for barley for which the demand is falling, the government has incurred substantial losses since 1956” (p. 22).

In 1930, the Dutch Government introduced a law that came into effect in July 1931, which guaranteed minimum prices for wheat at about twice the world-market level (Knibbe, 1993, p. 197). Canada also introduced a price stabilization scheme in 1944 through the Agricultural Prices Support Act, which was succeeded in 1958 by the Agricultural Stabilization Act (Turner, 1959).

The United States’ Agricultural Adjustment Act of 1933 attempted to stabilize the prices of main crops through subsidized destruction of produce and price supports. However, in the 1930s it was successful only for cotton and tobacco (Cochrane, 1979, pp. 287). Between World War II and 1952, this Act was dormant because of soaring agricultural prices. However, when farm prices fell again in 1952, the Act kicked in again and supply control programmes were brought back for wheat, corn and cotton (pp. 287-8). From 1955–1965, “there was a continuous struggle between those who advocated holding farm prices above their equilibrium levels through the employment of production controls and supply management and those who wanted to eliminate [them] and let farm prices fall to their market clearing levels” (p. 288). In 1965, through the Food and Agriculture Act, a compromise was reached which involved voluntary acreage control (where farmers were paid not to produce), price support for farmers participating in the programmes, income payments to them at or near world market levels as a means to protect farm income and foreign and domestic disposal of surplus agricultural products (p. 288). The programme is said to have worked fairly well until 1972, when farm prices started rising again (p. 288).

¹⁶ However, when the price shocks are too large, even price bands may not be enough. For example, in response to the recent dramatic rise in food prices because of rising demand from China and other fast-growing countries and because of dramatic increases in the demand for biofuel, countries like Viet Nam, a major rice exporter, imposed an export ban because it was worried about the availability of rice for the poor consumers at home.

Many developing countries have also used pricing policies to stabilize agricultural income. For example, since the 1960s, the Indian Government has announced minimum support prices for important products at the beginning of the sowing season and procurement prices towards the beginning of the harvesting season, at which the Food Corporation of India would procure any quantity of the relevant crop. In the early 1970s, the distinction between minimum support prices and procurement prices was abolished, which encouraged overproduction of the covered crops. However, this scheme stabilized the returns to the farmers and encouraged the adoption of Green Revolution varieties, eventually vastly enhancing the country’s food security (India case study).

Of course, guaranteeing minimum prices can create a large fiscal burden if it is combined with policies for excessively cheap food to consumers. This happened in Zambia with maize in the late 1970s and 1980s (Zambia case study). Initially, this looked affordable when the prices of copper, the country’s main export and the main source of government revenue, were high, but it became unsustainable when copper prices fell. Moreover, providing minimum prices for maize created disincentives for agricultural diversification, arresting the country’s agricultural and overall development.

Therefore, price stabilization programmes need to be carefully designed so as not to become a fiscal drain and an obstacle to production diversification. However, a well-designed price stabilization programme can bring benefits, as we have seen in Japan and other rich countries in the past. Chile also has had such a programme since the 1980s which initially covered maize, rice, wheat, oilseeds and sugar beets, but today it no longer covers maize and rice (see Box 12).

Box 12: The Chilean price bands system

Chile’s system of price bands sets a minimum and a maximum import entry price for a specific product. If the entry price is below the minimum, a variable levy is applied to increase the entry price until it reaches the floor of the band. If the entry price is above the ceiling of the band, then existing tariffs are reduced until the entry price coincides with the ceiling. If this is not enough, then an import subsidy would be applied, although this has never happened in practice. Between these levels, the market operates freely.

The floor and ceiling of the band are calculated by ordering the last 60 monthly international prices of the commodity from the highest to the lowest value. Then the 15 highest prices are eliminated, leaving the 16th price as the ceiling of the band. Likewise, the lowest 15 prices are eliminated and the 45th becomes the floor of the band. Each year, the first year of the series is dropped and the previous year comes into the calculation.

Unlike in other countries that have adopted a similar system, in Chile it remained restricted to only a few critical commodities (i.e. wheat, oilseeds and sugar). In addition, the system for calculating the band is fixed by law, thereby preventing the influence of political pressures in setting the band.

The price band system was established in 1983 and there was no agency to manage it because the existing state marketing agency had been abolished during the privatization drive of the late 1970s. However, it was accepted that a buying agency needed to be established because of the inherent imperfections in the internal cereal markets (i.e. oligopsonistic practices on the part of millers and small local buyers, usually truck drivers).

Because of the mistrust of the military government to perform any direct state action, this function was entrusted to a confederation of cooperatives of commercial grain producers-*Confederación de Productores de Granos* (COPAGRO). This institution operated on the government’s account, using state-owned storage facilities (carried over from the old state marketing agency) and an open line of credit from the state bank.

(cont.)

However, after a few seasons, COPAGRO went bankrupt because of the accumulation of wheat stocks which were not sold as a result of bad management. Therefore, the government was forced to establish a state-owned company, *Comercializadora de Trigo SA* (COTRISA), with small private-sector participation and with intent to pull out of it eventually.

However, when the democratic government came to power in 1990, COTRISA's role was enhanced. It was told to buy all the wheat that farmers would be willing to sell to it at the floor price of the band (i.e. the full cost of importing wheat at the floor price), less the storage and financial costs of holding the national harvest until it was fully consumed. The credibility of COTRISA's commitment to buy all the wheat offered was crucial in stabilizing and establishing a competitive buyers' market.

During the democratic period, COTRISA started opening buying outlets, mainly in the more remote areas of the drylands of the Andean and coastal ranges, where most of the small-scale farmers are located and there are fewer buyers. It also shifted from a policy of direct operation of the outlets to contracting them to small farmer cooperatives and NGOs. COTRISA's outlets increased from five (established in 1990 and fully operated by COTRISA) to 27 in 1994/95, of which only seven were directly operated by COTRISA (later this number was reduced to five).

The opening of new outlets in remote areas brought about an immediate increase in the prices paid by the traditional buyers to the level offered by COTRISA. In the first years of operation of the scheme, the prices increased from a low of 2 percent in a fairly connected and competitive locality, to 22 percent in remote, isolated localities. As the credibility of COTRISA grew, the price differentials and its purchases decreased. Its credibility also increased market transparency. Therefore, when the oligopsonistic buyers test COTRISA's ability to handle an unknown market, the market is stabilized after a few weeks of operation and the agency practically stops receiving supplies. COTRISA is still a major player in Chile's wheat market, but it has intervened very little, when measured by actual purchases.

The system is deemed to have worked well by allowing internal prices to lag the trend of international prices and preventing the day-to-day fluctuations of prices that create havoc in internal markets.

Unfortunately, the World Trade Organization (WTO) ruled in 2002 that Chile's price band system was against WTO rules. This forced the Chilean Government to modify the system. Under the new system, the upper and lower levels of the band had to be fixed every month. Therefore, it no longer guaranteed the same price at sowing time as at harvest and therefore could not provide the same degree of stability as the original scheme did. This affected wheat production from 2003-2005, reducing the area under wheat cultivation. However, this situation is currently being reversed due to the rise in international prices for agricultural commodities, including wheat and maize.

Source: Chile case study

Warehousing

Providing warehousing facilities is one tool of price stabilization that has not been receiving the attention it deserves. Most poor farmers need to sell their products soon after the harvest, which floods the market and causes prices to crash. This is largely because the farmers have little financial reserves to allow them to wait until they can get better prices. However, even the farmers who have some financial reserves may have to sell soon after the harvest if they do not have places to store their products. If the farmers can store their products and sell them more gradually, their incomes will be more stable and their average incomes may become higher.

Unfortunately, this is often not possible because storage facilities require large investments that are beyond the means of individual small-scale farmers. Our Ghana case study cites the lack of storage facilities as a key reason for price fluctuations in the country. In Ethiopia too, the absence of proper storage systems is considered to be a major cause of price fluctuations (Ethiopia case study).

Therefore, public intervention in providing warehousing facilities is a relatively simple but very helpful means of stabilizing income in the agricultural sector. Japan is the most successful example of such intervention, where the government made it compulsory since 1919 for the ubiquitous agricultural co-ops to offer warehousing services; this also had the benefit of offering a very stable source of income for the co-ops (FAO, 1966, pp. 20-23).

Insurance

In theory, risks due to agricultural income fluctuation can be covered by adequate insurance for crop or animal yields. Insurance coverage also encourages banks to make loans to farmers because the banks know that the default risk is lower. Therefore, many countries have tried to develop insurance schemes for agriculture. The trouble is that private-sector companies in poor countries do not like to extend insurance to small-scale farmers who are exposed to high risks. Also, farmers who are strapped for cash and who operate with a very short time horizon may not want to take out insurance, even when it is rational to do so.

Germany was a pioneer in the development of agricultural insurance. The German Government promoted livestock insurance through legislation in 1880 and 1909 (Cecil, 1979, p. 12). Interestingly, this development was directly transferred to Japan.

As early as 1888, Paul Mayet, a German consultant to the Japanese government, recommended introducing agricultural insurance (Yamauchi, 1986). However, it was only after the 1920s that Japanese policy-makers became seriously interested in agricultural insurance. In 1929, the Japanese Government introduced the Livestock Insurance Law and promoted livestock insurance by reinsuring the insurance companies (FAO, 1966, p. 25; Yamauchi, 1986, p. 224). In 1938, it enacted the Agricultural Insurance Law and promoted crop insurance by paying 15 percent of the insurance premiums (FAO, 1966, p. 25 and Yamauchi, 1986, p. 223). After the post-World War II land reform, the Japanese Government combined the crop insurance and livestock insurance systems under the Agricultural Loss Compensation Law in 1947. It is believed that this law “helped newly created owner/farmers to withstand yield losses arising from natural calamities and thus to avoid reverting back to tenant status” (Yamauchi, 1986, p. 224).

In the United States, the early failures of crop insurance offered by private companies prompted a Senate hearing in the 1920s and finally culminated in the Federal Crop Insurance Act of 1938, which set up the Federal Crop Insurance Corporation (FCIC), a public agency within the USDA (see Kramer, 1983; also see Gardner & Kramer, 1986). However, federal crop insurance, initially offered only to wheat, performed poorly in the first three years because of poor policy design and data and the FCIC had to be injected with public money three years later (Kramer, 1983, p. 190). The problems continued until the late 1940s, but after that the programme “gradually expanded and operated on a limited but successful basis” (Gardner and Kramer, 1986, p. 222).

The Indian Government administers the National Agricultural Insurance Scheme (NAIS), the world’s largest crop insurance programme (in terms of the number of farmers insured), covering 15 percent of all farmers and 17 percent of all cropped area (Rao, 2008). The insurance companies are allowed to charge only a flat premium and the government subsidizes a small

portion of the premium for small-scale farmers. While the programme has proven reasonably successful, the Indian Government is currently improving it, with a view to doubling the crop insurance penetration ratio by 2012 (for details of the proposed improvements, see Rao, 2008, pp. 48-63).

The third democratic government of Chile (2000–2005) established an agricultural insurance system covering mainly annual crops. It is operated by private companies but the government very heavily subsidizes the premium – 50 percent of the premium for commercial farmers (up to a maximum of USD2 000) and up to 85 percent for small-scale farmers. A government commission oversaw the operations of the private companies and also negotiated lower premiums. As a result, the premium fell from 4.9 percent of the insured amount to 2.8 percent (Chile case study).

Trade protection

Another common method of stabilizing farm incomes when there is a rapid inflow of new imports is trade protection of agriculture. There are also many other possible reasons to provide trade protection, including concerns about national food security and to provide stable markets for domestic manufacturing industries.

All of today's rich countries used agricultural tariffs. Many European countries raised agricultural tariffs, particularly from the 1870s, when grains, meat and dairy started arriving from the New World in large quantities because of the development of steamships and refrigeration technology and grains flowed from Russia and Ukraine via the railways. The most famous of these were the German tariffs during the 1870s under Chancellor Otto von Bismarck. They formed the so-called "union of iron and rye" by providing heightened agricultural protection to the Junkers and higher tariffs for the iron, steel and other heavy and chemical industries that were emerging then (Chang, 2002, p. 35).¹⁷ Bismarck's protection was tempered by a series of bilateral commercial treaties (or trade agreements) advanced by his successor, Count Caprivi, between 1891 and 1894, but was intensified after 1902 when these treaties expired (Tracy, 1989, pp. 89-92).

The French tariffs were also raised after the 1890s – especially under the influence of the famous politician Jules Méline, whose idealized vision of France as being full of artisans and small-scale farmers made agricultural protection an obvious solution to the country's economic problems. It is widely believed that France's strong protection of agriculture "diverted attention away from the need for a constructive long-term policy (Tracy, 1989, p. 78), while Germany's agricultural protection is believed to have contributed to the country's economic development by providing stable markets for infant industries (Koning, 2007, p. 207).

Even the United States (one of the countries that caused the wave of agricultural protectionism in Europe) introduced high agricultural tariffs in the 1890s, starting with the so-called McKinley Tariff (Blackbourn, 1997, p. 317). Moreover, in the face of the agricultural crisis from 1920–1921, tariffs were raised in 1921 on wheat, corn, meat, wool and sugar through an emergency tariff law, which was later ratified as the Fordney-McCumber Tariff in 1922 (Ingersent & Rayner, 1999, pp. 69-70). Needless to say, this did little to help farmers who were producing products for export (Ingersent & Rayner, 1999, p. 70).

¹⁷ German protection was not particularly high by international standards (Blackbourn, 1997, p. 317). It benefited not just the Junkers but also middle and large farmers (p. 316). It was, however, not very crucial in subsequent recovery (p. 317).

Another wave of increased agricultural protectionism arrived after the Great Depression. Major agricultural tariffs were imposed in Denmark, a country that had not used agricultural tariffs even in the late nineteenth century (Tracy, 1989, p. 206; Koning, 2007, p. 201) and the Netherlands, a country with very strong agriculture and the most consistent tradition of free trade since the eighteenth century (Knibbe, 1993, pp. 196-8). Germany imposed quotas on agricultural imports from Denmark and Sweden in 1932 (Murphy, 1957, p. 364). During this period, Germany also abused hygiene regulations to slow livestock imports even further (Blackbourn, 1997, p. 316; Tracy, 1989, pp. 91-2).

Quantitative restrictions were also used. In 1929, France “became the first country to make systematic use of [import quotas] as a means of protection” (Tracy, 1989, p. 165). In 1930, the Dutch Government introduced the requirement that bakers had to maintain 20 percent minimum content of Dutch flour (raised later to 35 percent, because this measure boosted Dutch wheat production) (Knibbe, 1993, p. 197).

Later in the twentieth century, Japan and Korea practically banned rice imports when their rice farmers became internationally uncompetitive; they were faced with natural limits to agricultural production in the midst of rising production costs that had resulted from rapid industrial development.

In the early post-World War II period, most developing countries protected much of their agriculture, especially foodgrains, mainly to pursue national food security and to provide stable livelihoods for farmers. However, the rise of the NCW since the 1980s has forced many of them to reduce their agricultural protection. As mentioned earlier, agricultural protection was seen as preventing countries from maximizing their income (and thus food consumption) by making them overproduce uncompetitive foodgrains and underproduce potentially competitive export items, such as horticultural products. It was rarely mentioned that many of the food items in developing countries were internationally uncompetitive, often because the rich countries heavily subsidized their own farmers who produced and exported such things. Even when the negative shocks from agricultural trade liberalization on small-scale farmers were acknowledged, they were seen as a transitory problem that would be resolved by overall growth in the economy.

The result of trade liberalization, when combined with reduced public intervention in input markets and other areas of agricultural policy, has been the demise of food production. As a consequence, national food security (and the food security of many poor people, including many farmers) has been compromised, as we have witnessed in the recent world food crisis. There has also been a negative impact on income stability for many farmers. Farmers who have limited capabilities to diversify, have either left the countryside or returned to traditional agriculture where there is even less government support and fewer opportunities for betterment.

4.2.2 Measures to improve marketing and processing

Producing greater quantities of raw agricultural products by using better inputs is important, but farmers’ final incomes critically depend on how products are processed and how and where they are marketed.

One important area of public intervention in agricultural marketing is regulating oligopsonistic practices in the distribution chain, which enables farmers to get better prices. Another important area of public intervention is providing and/or subsidizing public goods that are necessary if the products are to be sold in higher income areas. These public goods include transport infrastructure (e.g. roads, ports and, increasingly, airports), market information (e.g. amount

demand, prevailing tastes in the destination markets) and branding of products by variety (e.g. Blue Mountain coffee) or for export by the whole country (e.g. Colombian coffee). These inputs, of course, can also be provided by producer associations or farmer cooperatives with the government intervening indirectly by providing legal and financial help for those organizations.

There are other inputs into marketing that are not public goods, but which may be costly to provide (e.g. warehouses, cold storage or testing facilities for food sanitation and safety). The government may help small-scale farmers secure such inputs by providing better access to credit or, as happened in the past in many of today's rich countries, by promoting agricultural co-ops to pool resources and collectively purchase these inputs.

In addition to better marketing, better processing of agricultural products is very important for raising rural incomes. Relatively simple processing of agricultural raw materials can add significant value and thus promote industrialization and overall economic development. Butter and cheese bring better value for milk producers. Exporting live farm animals is less profitable than exporting raw meat, which in turn is less lucrative than turning it into cured meat like bacon. Processed palm oil commands much higher prices than unprocessed palm oil, and so on.

Processing adds value and also reduces waste. Fruits and vegetables that could not be sold immediately would have to perish and be thrown away without canning, drying or freezing processes. For example, in Ghana, it is estimated that 20-40 percent of agricultural products are lost because they are not processed (Ghana case study). In India, it is estimated that about 40 percent of fruits and vegetables are lost after the harvest (WDR, 2008, p. 126).

Developing agroprocessing industries is also important in creating more lucrative, rural, non-farm employment, which is particularly helpful for those who have little or no land and therefore rely mainly on employment for their livelihoods.

For these reasons, in the early post-World War II years many developing countries tried to intervene in agricultural marketing and promote agroprocessing industries. Some of these interventions did not produce good results, such as the state-owned agroprocessing enterprises in Ghana. The NCW used to highlight these failures in state marketing and processing and advised countries to abolish state marketing boards and privatize state-owned agroprocessing industries. However, trade liberalization, especially reductions in industrial tariffs, forced many incipient agroprocessing firms in developing countries to close down. At the same time, privatization and deregulation did not lead to the emergence of vibrant private-sector firms taking over marketing and processing functions from the state, because they too needed public support, ranging from better infrastructure (for marketing firms) to protective tariffs (for agroprocessing firms).

Fortunately, the proponents of the NCW seem to have realized that much more than free play of market forces is necessary if developing country farmers, especially small-scale farmers, are to market their products better and add more value to their products. For example, WDR 2008 (Chapter 5) shows a clear awareness that markets do not spring up naturally once the hand of the state is removed. Further, it suggests a whole range of public interventions and public-private partnerships in marketing, although its support of similar interventions in agroprocessing is more muted, probably because of its unwillingness to endorse protectionist industrial policy.

Modernizing the marketing channels

In most developing countries, agricultural markets are segmented because of poor transportation, which gives local merchants monopsonistic or oligopsonistic powers, enabling them to extract

more from the farmers. In countries with a high incidence of tenancy, the landlords often act as agricultural merchants, maintaining even more bargaining power over the small-scale farmers. One obvious solution to this problem is improving transport infrastructure and integrating national markets so that local buyers lose much of their bargaining power.

However, the process of integrating markets by providing roads and other transport infrastructure is a slow process. Therefore, governments can decide to deliberately bring alternative purchasers into the market and weaken the existing monopsonistic powers. In countries like Denmark, Japan and Korea, cooperatives played this role, although in these countries the state was also deeply involved through schemes like compulsory government procurement of key grains (as in East Asia) or state export marketing boards (as in Denmark) (See Box 11). Surprisingly, even in supposedly free-market Chile, state marketing agencies have protected small-scale wheat farmers against oligopsonistic millers. Large private-sector firms, including foreign companies (like supermarkets) based in rich countries, also can counter traditional high-cost merchants with local monopsonies.

Moreover, if the alternative purchasers are large entities with direct (or at least less mediated) access to consumers, farmers' incomes will increase as a result of reduced transaction costs; the number of transactions will be reduced as will the unit transaction costs (given the need for costly investments in things like storage and transportation facilities).

Of course, the net benefit to small-scale farmers of a "non-traditional" marketing arrangement will depend on the kind of alternative purchaser. If it is an agricultural co-op that does not seek profit, it is likely that small-scale farmers will benefit. State marketing agencies have mixed records in this regard – often, they were used to squeeze surpluses from farmers. If the purchasers that replace the traditional merchants are large private-sector firms, (especially national or even international supermarkets), they may benefit small-scale farmers through their lower unit marketing costs and better quality management techniques. However, exactly how much benefit they will bring also depends on the relative bargaining powers of those involved. On the one hand, these large firms may have even greater market power than the local merchants, potentially making them even more capable of extracting larger shares of surplus from small-scale farmers than traditional merchants. On the other hand, if small-scale farmers are organized into co-ops, they may be able to extract a better deal than when they are dispersed.

Product quality management

Product quality management is an issue even for simple products like wheat; that is why Canada established a wheat marketing board during World War I (Turner, 1949, p. 595). Canada later extended the scheme to all agricultural products through the Agricultural Products Cooperative Marketing Act of 1939 (p. 595).

Processed agricultural products require greater product quality control than unprocessed agricultural commodities, particularly for products for the export markets. Typically, countries that import agricultural products, especially processed agricultural products, are richer countries with higher product quality and hygiene standards. The tests and inspections required to meet these standards are beyond the means of small-scale farmers. However, an inability to meet these standards would mean either that the country could not export or that its exports, exhibiting inconsistent quality, would command lower prices than their average qualities would warrant.

Today's rich countries resolved the problem of agricultural product quality management through agricultural marketing cooperatives or state export marketing boards – or indeed a *de facto*

merger of the two (as was the case in Denmark between the 1930s and 1950s). The Danish Government imposed quality standards on butter, in association with cooperative butter export associations (Murphy, 1957, p. 364). The government used a more indirect means for bacon – it encouraged quality improvement through government-endorsed bacon quality competitions (Murphy, 1957, p. 364). In 1932 and 1933, Denmark set up export marketing boards for cattle, meat, butter, cheese, eggs, poultry, horses, straw and potatoes (Murphy, 1957, pp. 367-8).

Partly in response to Danish competition, the Dutch Government introduced butter quality control in 1889 (Knibbe, 1993, pp. 164-5). Initially, the police were given the authority to take butter samples and check their quality. Laws were subsequently revised (in 1902 and 1908) to introduce penalties for violators and in 1903 a specialized butter research station was set up and professional inspectors were hired. The government also subsidized a scheme run by the Frisian agricultural association to inspect the butter-making process, which covered 90 percent of butter production by 1912. In 1900, the Dutch Government set up the phyto-pathological service, in response to a new United States regulation (Knibbe, 1993, p. 164). In 1902, an export meat quality control service was established (Knibbe, 1993, pp. 165-6).

In Sweden, butter quality for the export markets was primarily maintained by the Swedish National Creamery Association, which had a virtual export monopoly, but the State Agricultural Board closely supervised the Association (Yetterborn, 1938, p. 191). In the United States in New York, the state supervised quality maintenance in the dairy and slaughter industries (Colman, 1935, p. 43, and p. 49).

Box 13: Contract farming in Zambia

After the demise of cooperatives and other state-sponsored marketing institutions in the 1990s, contract farming emerged to fill the gap in Zambia. This was most successful in high-value crops such as paprika, vegetables, cotton, sunflowers and soybeans.

The most common method used was “resource-providing contracts”, whereby a processing or marketing firm provided resources to farmers to be used in the production process. The contracting agency provided inputs to the producer and repayment of the inputs was in kind.

Another type of contract is the “management and income-guaranteeing contract” which involves forward contracting to supply a product at an agreed price and quality. The farmer does not have to look for a market for the product after harvest.

The cotton industry provides a particularly interesting and important example. A company supplied inputs to an entrepreneur, who in turn provided these inputs to selected farmers in his locality who were contracted to produce a specified volume of cotton. The farmers were obliged to supply cotton to the entrepreneur who in turn was contracted to supply to the cotton company. This arrangement worked well and the recovery rates were very high (over 95 percent in some years), until the 2005 season when the Kwacha appreciation forced cotton ginneries to reduce their pre-planting prices, which made farmers rebel.

Source: Zambia case study

Today, underfunded governments in developing countries often struggle to provide adequate services for agricultural product (especially export) quality control, especially for the tests for sanitary and phyto-sanitary requirements. For example, in Zambia, difficulty in meeting the sanitary and phyto-sanitary requirements is a major obstacle to exports, but the Ministry of Agriculture is unable to provide a satisfactory testing service, even in collaboration with the Zambia Export Growers Association (ZEGA). (Zambia case study).

Today, another channel for export quality control has opened up with the emergence of so-called “contract farming” or “outgrower schemes”. Large, private-sector companies, often multinational companies, guarantee the purchase of certain amounts of product at certain prices, thereby reducing the marketing costs for small-scale farmers and guaranteeing them a minimum income. They also typically provide credit to buy inputs (e.g. seeds and fertilizers). They impose stricter product quality standards while helping farmers improve their product quality, thereby making it easier for them to export to rich country markets that have higher product quality standards and prices. Contract farming is deemed to have been quite a success for crops like cotton and export vegetables in Zambia. (Zambia case study).

Processing

While agroprocessing has the potential to add value and create additional employment, it is often not taken up by small-scale farmers – even when its value is obvious, as in the case of making butter out of milk – because it requires capital investments that are beyond the means of the small-scale farmers. Capital requirements may be even higher for exported products because they typically need to meet the higher quality and hygiene standards of the more industrialized, richer countries.

In the history of today’s rich countries, Denmark may be the most successful example of a country developing an agroprocessing industry. In the late nineteenth century, Denmark developed very successful export-oriented butter and bacon industries by setting up co-ops that collectively established processing facilities for milk and pork. Co-op dairies emerged in 1882 and co-op bacon factories began in 1887.

In Sweden, meat-packing associations emerged in 1899, modeled after the Danish ones. Around the turn of the twentieth century, Dutch cooperatives successfully developed industries processing milk, potato starch and sugar (Knibbe, 1993, p. 150). Japan was also successful in promoting rural industries that processed agricultural products, such as silk, through co-ops from the 1920s.

Since the democratic transition in Chile in 1990, the small-scale farmer agency INDAP has provided special assistance, including investment funds, for group processing and marketing of produce through cooperatives or other group marketing schemes. An interesting programme involved linking agro-industrial plants with small-scale farmers using a contract farming scheme. Under this arrangement, INDAP channeled technical assistance and credit through cooperating agro-industries, which provided secure contracts at sowing time, a fair pre-established price and technical assistance (Chile case study).

5

CONCLUSIONS

There is a lot to learn from history about improving agricultural policy in today's developing and transition economies. This does not mean simply examining the history of those countries to discover what went right or wrong. In fact, there is much to learn from the history of agricultural policy in today's rich countries because in their earlier stages of development, they had to grapple with the very problems that dog the agricultural sector in today's developing countries. Problems related to land tenure, land degradation, fragmentation of holdings, agricultural research, extension services, rural credit, irrigation, transport, fertilizers, seeds, price and income stabilities, trade shocks, agroprocessing and marketing were all present. In this report, we have shown a range of policies that today's rich countries used in the past and have tried to draw lessons from them for today's developing and transition economies.

The report shows that many successful policy interventions go well beyond (or even against) the recommendations of the NCW, which has ruled agricultural and other policies in the last quarter of a century:

- Land reform today is supported only in very muted and market-based forms (e.g. no ownership ceilings, liberalized land markets), but Japan and other East Asian countries had very successful comprehensive land reform that included strict land ownership ceilings.
- State-backed, specialized rural banks and credit subsidies are only reluctantly accepted by the NCW, but virtually all of today's rich countries used these devices. In the current orthodoxy, profit-driven microfinance is favoured over credit co-ops, but many of today's rich countries used the latter successfully. Ghana's rural banks, owned equally by the government and the local community, are an innovative variation on the theme.
- While marketing boards are routinely denounced by the orthodoxy, especially in sub-Saharan Africa, Denmark and some other European countries have benefited from effective export marketing boards.
- Co-ops are not exactly discouraged by the proponents of the NCW, but the central role that they played in the development of agroprocessing and marketing in Denmark, Germany, Sweden and Japan are not sufficiently emphasized by them.
- Price stabilization measures are frowned upon by the NCW, but many of today's rich countries used them and some had great success with them, such as the United States and Japan. More recently, Chile has used a very effective price stabilization scheme.
- Things like state-subsidized agricultural insurance, public provision or subsidization of warehousing facilities and input (e.g. fertilizer) quality control were very useful policies used by today's rich countries (and some of today's developing countries, like Chile in the case of state-subsidized insurance). Today's orthodoxy does not actively object to them, but they don't give them sufficient attention.

All these suggest that the contents of the agricultural policy tool box for today's developing countries will be significantly enriched if history is taken more seriously.

There has been enormous variety in the institutional forms that have successfully delivered critical needs of the agricultural sector. There were successes with all forms of delivery in all sorts of countries – public provision (e.g. agricultural research in the United States, extension in the Netherlands, irrigation in Viet Nam, seeds in Mexico, rural credit in Germany), private

provision (e.g. marketing service through contract farming in Zambia, machinery services in Egypt), private delivery subsidized by the state (e.g. agricultural insurance in Chile, certain types of research in the Netherlands), public-private partnership (e.g. irrigation in Sweden), cooperatives (e.g. butter and bacon processing and marketing in Denmark, credit co-ops in Germany), state-cooperative partnership (e.g. rural banks in Ghana, export marketing in Denmark, fertilizer supply in Korea). This suggests that the standard dichotomy between the public sector and the private sector is crippling our policy imagination.

Our study also reveals cases of failure with many of these delivery modes. Public provision failed miserably in agroprocessing in Ghana before the 1980s. Private provision failed spectacularly in fertilizer supply in post-socialist Hungary, in agricultural education in post-socialist Ukraine and in extension and fertilizer supply in post-reform Ghana. Sometimes both the public sector and the private sector failed in the same area, suggesting that the causes of the problem were deeper than ownership form – rural credit in Zambia and seed supply in Ghana are such examples. Cooperatives in many developing countries were not very successful, which gave cooperatives a bad image.

All of these examples suggest the importance of a pragmatic approach, not bound by pro-state or pro-private-sector ideologies. Indeed, one important common characteristic of the success stories is their willingness to pick solutions that do not fit neatly into ideological boxes. A particularly interesting example is Chile. Right after General Pinochet's coup, Chile implemented extreme versions of most NCW policies, but over time it has come to recognize their limitations and slowly strengthened public intervention in almost all key areas, including extension services, subsidized credit, price stabilization, irrigation, agricultural insurance and marketing. This started during the military government but has been strengthened by the democratic governments.

Our report also shows that it is important for countries to actively import and adapt policy and institutional innovations from abroad and to develop their own innovations:

- The idea of cooperatives was first implemented in the United Kingdom in the form of a consumer co-op in 1844, but the Germans and the Danes developed the idea for production. Sweden explicitly modeled its co-ops after the German and the Danish ones. This idea was perfected by the Japanese, who invented the generalized co-op, rather than a single-product (e.g. egg) co-op or a single-input (e.g. credit or irrigation) co-op. The generalized co-op better coordinated different activities and raised the efficiency of co-ops.
- Agricultural research was first started in Germany in 1852, but the United States and Japan honed it to a fine art. Extension services were first started in the United Kingdom in 1834, but they were further developed by Germany and, later, the United States and Japan. In developing its agricultural research system, India imported many ideas from the United States.
- The United States imported its farm credit system from Germany and Scandinavia, after sending delegations to those countries on a fact-finding mission: "Two commissions, one private and one appointed by President Wilson, went to Europe in 1913 to study agricultural credit and cooperation in Northern Europe" (Cochrane, 1979, p. 289). Japan copied Germany's hypothec bank.
- Canada consciously imitated the United States irrigation law and hired American irrigation experts. Agricultural insurance was first put on Japan's policy agenda at the recommendation of a German consultant.

Our report shows how much we can learn from history – not only from developing and transition countries but also from today's rich countries when they were at levels of development similar to those found in the majority of developing countries today. History frees our "policy imagination"

in the sense that it shows us that the range of policies and institutions that have produced positive outcomes for agricultural development has been much wider than any particular ideological position – be it the pre-1980s statist one or the pro-market NCW – would admit. History also shows that the willingness to experiment with new policies and institutions and the willingness to learn from and improve upon other countries' successes were important in all agricultural success stories, ranging from Germany in the nineteenth century to Chile in the last few decades.

REFERENCES

- Blackbourn, D. 1997.** *The Fontana History of Germany, 1780-1918*, Fontana Press, London.
- Cecil, R. 1979.** *The Development of Agriculture in Germany and the UK, volume 1. German Agriculture, 1870-1970*, Wye College, Ashford.
- Chang, H-J. 2002.** *Kicking Away the Ladder – Development Strategy in Historical Perspective*, Anthem Press, London.
- Chang, H-J. & Grabel, I. 2004-5.** Reclaiming Development from the Washington Consensus, *Journal of Post Keynesian Economics*, vol. 27, no. 2.
- Cochrane, W. 1979.** *The Development of American Agriculture – A Historical Analysis*, University of Minnesota Press, Minneapolis.
- Colman, G. 1965.** Government and Agriculture in New York State, *Agricultural History*, vol. 39, no. 1.
- Cox, M., Munro-Faure, P., Matheiu, P., Herrera, A., Palmer, D., and Groppo, P. 2003.** FAO in Agrarian Reform, *Land Reform, Land Settlement, and Cooperatives*, 2003, no. 2.
- Estey, R. 1988.** Publicly Sponsored Agricultural Research in Canada since 1887, *Agricultural History*, Spring, 1988.
- FAO 1950.** *National Agricultural Improvement*, Food and Agriculture Organization (FAO) of the United Nations, Rome, Washington, D.C.
- FAO 1966.** *Agricultural Development in Modern Japan – The Significance of the Japanese Experience*, Food and Agriculture Organization of the United Nations, Rome.
- FAO 2003.** *Trade Reforms and Food Security: Conceptualizing the Linkages*, FAO, Rome.
- FAO 2006.** *Trade Reforms and Food Security: Country Case Studies and Synthesis*, FAO, Rome.
- Francks, P., Boestel, J. & Kim, C. H. 1999.** *Agriculture and Economic Development in East Asia – From Growth to Protectionism in Japan, Korea and Taiwan*, Routledge, London and New York.
- Frederiksen, D. 1894.** Mortgage Banking in Germany, *Quarterly Journal of Economics*, vo. 9, no. 1.
- Freund, 1946.** Squandering the Public Domain in Sweden: 1820-1870, *The Journal of Land and Public Utility Economics*, vol. 22, no. 2.
- Fuhriman, W. 1949.** Federal Aid to Irrigation Development, *Journal of Farm Economics*, vol. 31, no. 4.
- Gardner, B. & Kramer, R. 1986.** Experience with Crop Insurance Programs in the United States in P. Hazell, C. Pomareda and A. Valdes (eds.), *Crop Insurance for Agricultural Development – Issues and Experience*, The Johns Hopkins University Press, Baltimore and London.
- Garraty, J. & Carnes, M. 2000.** *The American Nation – A History of the United States*, Tenth edition, Addison Wesley Longman, New York.
- Gras, N. 1925,** *A History of Agriculture in Europe and America*, F.S. Crofts & Co. Publishers, New York.
- Henriksen, I. 1992.** The Transformation of Danish Agriculture, 1870-1914, discussion paper, Institute of Economics, University of Copenhagen, as reprinted in K. Persson (ed.), *The Economic Development of Denmark and Norway since 1870*, Edward Elgar, Aldershot.
- Henriksen, I. 2006.** An Economic History of Denmark, EH.Net Encyclopedia. URL <http://eh.net/encyclopedia/article/henriksen.denmark>.
- Ingersent, K. & Rayner, A. 1999.** *Agricultural Policy in Western Europe and the United States*, Edward Elgar, Cheltenham.
- Knibbe, M. 1993.** *Agriculture in the Netherlands, 1851-1950: Production and Institutional Change*, NEHA, Amsterdam.

- Koning, N. 2007.** What Can Be Learned From the History of Developed Countries? In N. Koning & P. Pinstrup-Andersen (eds.), *Agricultural Trade Liberalization and the Least Developed Countries*, Springer, New York.
- Kramer, R. 1983.** Federal Crop Insurance, 1938-1982, *Agricultural History*, vol. 57, no. 2.
- Kristensen, K. 1930.** Public Guidance in Rural Land Utilization in Demark, *Annals of the American Academy of Political and Social Science*, vol. 150.
- Lee, G. 1963.** The Morrill Act and Education, *British Journal of Educational Studies*, vol. 12, no.1.
- Lee, H.-C. 1999.** *Hankook Gyongje Tongsa* [Economic History of Korea] (Bup-Moon Sa, Seoul) [in Korean].
- Lee, L. 1966.** The Canadian-American Irrigation Frontier, 1884-1914, *Agricultural History*, vol. 40, no. 4.
- Maddison, A. 2003.** *The World Economy: Historical Statistics*, OECD, Paris.
- McKinley, T. 2004.** *Economic Policies for Growth and Poverty Reduction: PRSPs, Neoliberal Conditionalities and "Post-Consensus" Alternatives*, Paper Presented at the IDEAs International Conference, "The Economics of the New Imperialism", JNU, Delhi, 22-24 January 2004.
- Micheletti, M. 1990.** *The Swedish Farmers' Movement and Government Agricultural Policy*, Praeger, New York.
- Murphy, J. 1957.** The Development of Centralized Exporting in Danish Agriculture, *Southern Economic Journal*, vol. 23, no. 4.
- Putzel, J. 1992.** A Captive Land – The Politics of Agrarian Reform in the Philippines, Catholic Institute for International Relations, London, and Monthly Review Press, New York.
- Rao, K. 2008.** Risk Management of Small Farms in India, a report for FAO, Rome.
- Rosenthal, J-L. 1990.** The Development of Irrigation in Provence, 1700-1860: The French Revolution and Economic Growth, *Journal of Economic History*, vol. 50, no. 3.
- Schön, L. 2006.** Swedish Agriculture in Economic Development, 1870-1913, paper presented at the XIV International Economic History Congress, Helsinki, 21-25 August, 2006.
- Sejersted, F. 1992.** A Theory of Economic and Technological Development in Norway in the Nineteenth Century, *Scandinavian Economic History Review*, vol. XL, no. 1.
- Selby, H. 1949.** The Importance of Irrigation in the Economy of the West, *Journal of Farm Economics*, vol. 31, no. 4.
- Sugihara, K. 1996.** Agriculture and Industrialization: The Japanese Experience in P. Mathias & J. Davis (eds.), *The Nature of Industrialization, volume 4 – Agriculture and Industrialization: from the Eighteenth Century to the Present Day*, Blackwell Publishers, Oxford.
- Teele, R. 1926.** The Financing of Non-Governmental Irrigation Enterprises, *Journal of Land & Public Utility Economics*, vol. 2, no. 4.
- Tracy, M. 1989.** *Government and Agriculture in Western Europe, 1880-1988*, 3rd Edition, Harvester Wheatsheaf, New York.
- Tuma, E. 1971.** *European Economic History – Tenth Century to the Present*, Harper & Row, New York.
- Turner, A. 1949.** Federal Marketing and Price Support Legislation in Canada, *Journal of Farm Economics*, vol. 31, no. 4.
- Turner, A. 1959.** Canada's Experience in Agricultural Support Measures, *Journal of Farm Economics*, vol. 41, no. 5.
- UNCTAD 1998.** Trade and Development Report 1998, UNCTAD (United Nations Conference on Trade and Development), Geneva.
- van Zanden, J. 1991.** The First Green Revolution: The Growth of Production and Productivity in European Agriculture, 1870-1914, *Economic History Review*, vol. 44, no. 2.
- van Zanden, J. 1994.** The Transformation of European Agriculture in the Nineteenth Century: the Case of the Netherlands, VU Uitgeverij, Amsterdam.

- Warming, J. 1923.** Danish Agriculture with Special Reference to Cooperation, Quarterly Journal of Economics, vol. 37, no. 3.
- World Bank 2008.** World Development Report 2008 – Agriculture for Development, Oxford University Press, New York.
- Yamauchi, T. 1986.** The Crop Insurance Program in Japan in P. Hazell, C. Pomareda and A. Valdes (eds.), Crop Insurance for Agricultural Development – Issues and Experience, The Johns Hopkins University Press, Baltimore and London.
- Ytterborn, G. 1938.** Agricultural Cooperation in Sweden, Annals of the American Academy of Political and Social Sciences, vol. 197.

ANNEXES

ANNEX 1 PROFILE OF CHILE

1. Setting

Chile has a population of 15 million (2002), of which nearly 13 percent live in rural areas. Agriculture contributes approximately 6 percent of the gross domestic product (2004-2007). If agriculture-linked industries are included, it may account for nearly 15 percent. Agriculture also accounts for 29 percent of the merchandise exports (2002-2003). Due to the high rate of growth of the economy there has been remarkable decline in poverty – 13 percent of the population now lives below the poverty line, compared to 40 percent in 1989.

Due to its length (4 300 km) and diverse topography, Chile has wide variety of micro-climatic regions. The prime agriculture area lies between 200 km north and 500 km south of the capital, Santiago. Most of the agricultural export (fruits, vegetables and high-quality wine) are produced in this area. In the northern arid regions, extensive livestock production is dominant. In the irrigated parts of this region, early varieties of grapes and fruits are produced. In the Andean piedmont and coastal hilly range, extensive livestock production is practiced, and annual crops, mainly wheat and legumes, are cultivated. In recent years forest plantations have also been gaining importance. In the south, the terrain is hilly and provides suitable conditions for natural forests, pasture-based dairy production as well as cultivation of cereals and forest plantation. In the far south, the population is sparse. Sheep and cattle for beef are the main activities carried out, with some areas devoted to vegetable cultivation.

The nearly 40 years covered by the study have witnessed a democratically elected government (1960-1964 and 1964-1970), a socialist regime (1970-1973) followed by military dictatorship (1973-1982) and an orthodox free-market approach (1983-1989), which was somewhat softened in the later period. Since then democratic center-to-left coalition governments (1990-2005) have ruled the country. Economic policies, including agricultural policies, can be distinguished according to the political and economic orientation of the government of the period.

2. Macro Policies and their Impact

As a legacy of the Great Depression of the 1930s, which brought down foreign exchange earnings to one third of their pre-crisis value, a policy of import substitution emphasizing industrialization and ‘cheap food policy’ was pursued. This resulted in the neglect of agriculture and high inflation, the latter reaching a level of 100 percent in the mid 1950s. Agricultural growth was creeping at the rate of 1.8 percent per year (annual population growth was 2.5 percent). The policy reforms in agriculture were constrained because of the skewed distribution of land.

The right-of-center coalition, which took power in 1958, sought to reduce the presence of the state in economic affairs and oriented its exchange rate, price and credit policies accordingly. However, the liberal measures taken in these areas were defeated by a serious balance of payment crisis and resultant currency speculation, and a heavy rate of inflation.

The 1964-1970 Christian Democratic government took a middle path. A new exchange rate policy was announced, aiming to systematically and gradually adjust the exchange rate, guided by the difference between the internal and external interest rates. Monetary policy was designed to increase real interest rate. The policy led to an increase in the real exchange rate, and contributed to a surplus in the balance of payment. The government opened markets for exports by joining

regional trading groups. It discontinued the import substitution policy and liberalized internal markets. With a decrease in the level of protection provided to industry, prices of industrial products declined and those of agricultural produce increased.

The socialist regime, which took power in 1970, tried to replace the existing economic order by bringing to an end the monopolies in industry and trade, and *latifundia* in the agriculture sector. It discouraged the entry of foreign capital. The money supply was increased to raise the wages of the workers. But this led to galloping inflation.

The military government, which reigned from 1973-1990, followed the textbook liberal market policies in its initial phase. Price controls were removed, a large number of public enterprises were privatized, and the domestic currency was devalued. The plethora of exchange rates were brought down to one, and used to signal resource allocation.

However, with the balance of payment crisis, there was some rethinking on the policy. A more pragmatic macro-economic policy framework was introduced in 1983. The most important measures undertaken during this period included: reintroduction of managed foreign exchange markets; payment of accumulated external debts of the banks; and more stringent regulation of the financial sector. While the policy helped the economy to take off, it left a huge debt burden on the country, and constrained the government in its dealings in the international finance and foreign exchange markets.

With the end of military rule in 1989, three successive governments have followed a pragmatic approach to economic management. The first post-military government (1990-1994) continued those policies, which demonstrated efficiency, and complemented them with new measures that would improve the equitable distribution of the fruits of development. Tax reforms were instituted with this objective in mind, and investment in improving infrastructure was given high priority. The second democratic government (1994-2000) continued the same policies. In addition, it reintroduced the band system for the exchange rate. However, in the wake of the Asian crisis of 1987, it had to take drastic measures in the areas of interest and foreign exchange rates, which impacted negatively on the growth process. The succeeding government (2000-2005) maintained the same policy stance, but targeted inflation (at 2-4 percent) and public expenditure surplus (at 1 percent). Thus, Chilean economic policies were shaped according to the ideological predilections of the government of the day and went through the phases of pragmatism, textbook market orientation, and doctrinaire socialist policies.

3. Agricultural Policies

Agricultural policies basically mirrored the stance taken by the government of the day on macro policies. In the post-depression years (1930s), the government pursued a policy of encouraging industry aimed at 'low food prices'. This led to the neglect of the agricultural sector, and annual agricultural growth dropped to 1.8 percent. Skewed distribution of land holdings prevented a reversal of the price policy, as the high prices would have benefited the large farmers disproportionately. Therefore, breaking the large farms came on the policy agenda. The succeeding government did not make any major change in agricultural policies. It continued, for example, with fertilizer subsidies. However, at the result of the Alliance for Progress, initiated by US President Kennedy, land reform legislation was passed to appropriate large farm after paying compensation to the landlords in long-term bonds.

Overall agricultural policies during this phase (1964-1970), also called the *Revolution with Freedom Phase*, sought to remove the backwardness, social and economic, of the agricultural

sector. To achieve this objective more expedient expropriation of large holdings and unionization of farm workers were encouraged. Nearly 12 percent of the country's agricultural land was expropriated and approximately 50 percent of the farm labour force was organized in farm unions. Along with land reforms, an increase in administered prices for basic foodstuff at the farm level was instituted. Systematic programmes were launched to improve comparative advantages of Chilean agriculture. Long-term credit at positive interest rates was introduced, public investment in infrastructure was enhanced, and cooperatives were encouraged. Agriculture responded with a high annual rate of production, at 5 percent compared to 1.8-2 percent during the earlier period.

The socialist government (1970-1973) deepened the land reforms process and encouraged collectivization. However, even for the reformed agricultural sector very little technical advice was provided and credit supply was choked. The result was a substantial fall in agricultural production.

The military government, which followed the socialist regime, mirrored its predecessor's liberal macro policies in the agricultural sector. The main objectives of agricultural policies were to: liberalize agricultural markets; reduce state interventions; and grant full guarantees to private properties in the countryside. Expropriated land was given back to previous owners, and those that could not be divided were auctioned. However, these measures were not accompanied by adequate credit at reasonable interest rates. Therefore, new owners could not benefit. Extension services were privatized, which, however, did not expand in coverage or improve in quality. Domestic demand and production of livestock products were depressed. The main beneficiaries were non-natural forest plantations, which received huge subsidies. Annual growth of agricultural production returned to 2 percent.

This prompted the government to take a more pragmatic stand. Accordingly, several measures were introduced. Important among these were: (i) introduction of the price band; which prevented daily price swings; (ii) arrangement for special credit facility for agriculture with innovative lending arrangements; (iii) strengthening of the research and extension system; and (iv) re-launching of the state-owned sugar beet industry, with contract farming arrangements with the growers. The result of this policy package was an increased rate of growth in agricultural production leading to self-sufficiency in staple foods. The increase in production was mainly due to increase in yields. Employment in the sector rose by 30 percent. Thus, prosperity of agriculture was more equitably shared.

The government paid special attention to poverty reduction and development of the backward regions. Social services, education and health were extended to poorer areas. Important initiatives were taken to bring women, and to an extent youth, into the mainstream of development. All of these measures resulted in a decline in poverty from 52 percent in 1987 to 34 percent in 1992.

The democratic governments following the military regime (1989-1994) continued many policies of their predecessors. For equitable and sustainable agricultural growth, the government made a three-pronged effort: (i) to maintain and improve the dynamism of agricultural growth; (ii) to protect natural resources; and (iii) to assist small farmers to join the mainstream of agricultural development.

Overall agricultural production growth at 3 percent per year during this period was slower than the previous period (5 percent), yet it was not only quite satisfactory, but benefits were shared more widely. The growth of the wine, forestry and dairy sectors was much higher than that of the cereal sector. The latter was also affected by depreciation of the local currency, high wages and downturn in international commodity prices.

The second democratic government (1994-2000) also continued the policies of the previous government. The major objectives were revitalization and diversification of agricultural production, and modernization of the small farm sector. Resources were made available to organize joint ventures with the private sector to promote exports. Various trade negotiations were conducted to open up markets for agricultural commodities.

The third democratic government (2000-2005) continued the same policies but introduced several innovations. A more participatory mechanism was developed to consult with commercial farmers as well as small farmers. Market development for agricultural exports was pursued more vigorously. A fund to encourage small farm development was established. Banks were subsidized for the transaction costs incurred. Research institutions directly relevant to agriculture were handed over to the agricultural department.

4. Organizational and Programmatic Interventions

A low level of public intervention characterized 1958-1964 agricultural policies. However, a fertilizer subsidy was introduced and was kept on until 1973. As part of the land reform initiative, a land reform agency, “*Corporación de Reforma Agraria*”, (CORA) was created. The National Institute for Agricultural Development (or *Instituto de Desarrollo Agropecuario* (INDAP) in Spanish) was established to provide technical assistance and credit to small farmers. In the later years, it played an important part in mainstreaming small farmers into Chile’s agriculture.

In the so-called ‘Revolution with Freedom’ phase (1964-1970), the beneficiaries of land reforms were organized into cooperative production units. CORA nominated administrators for these cooperatives for the first three years. The Chilean Development Finance Corporation and the Planning Office within the Ministry of Agriculture conducted studies on the basis of which programmes for various sub sectors were formulated: credit, technical assistance and agro-processing infrastructure.

During this period several autonomous public institutions were created. These included (apart from INDAP) the Agricultural Planning Office, Agricultural and Livestock Services, the National Institute of Agricultural Research and National Forestry Corporation.

During the socialist phase (1970-1973), the process of land reform and unionization of agricultural workers was greatly accelerated. However, little attention was paid to their impact on production. The government created large state farms on government lands, as well as by incorporating the estates of erstwhile large and medium landowners. However, a large majority of these units did not receive state assistance. The initiative resulted in the reduction of agricultural production.

The military regime (1973-1982) returned the expropriated lands to their previous owners or auctioned them to the highest bidder. The new owners of the land did not receive adequate credit or production support, although a huge subsidy was given to the plantation sector. In line with the liberal macroeconomic policies, national extension services were privatized, but neither was the coverage extended nor quality of service improved. These steps were soon retraced. The National Agricultural Research Institute and National Institute of Agricultural Development were once again entrusted with extension services, and groups of farmers were involved in farm-to-farm extension. State-owned sugar beet factories were re-launched, and they in turn entered into the farming contract with the growers. A special fund was created to subsidize small-scale private irrigation.

One of the major contributions of the democratic government was strengthening the marketing infrastructure by revitalizing the parastatal marketing organization COTRISA, which operated mostly in the cereal markets and mainly in wheat. (It is now a highly successful enterprise.) The government also placed high emphasis on extending and renovating irrigation sources, and encouraging and subsidizing advanced irrigation practices, i.e. drip irrigation. It strengthened the sanitary control agency, streamlined data collection machinery, emphasized adaptive research, and established norms for the maximum pollution level for air and water. In addition, natural forests were protected from widespread exploitation.

A series of programmes was initiated to improve the role of small farmers, the most successful being the inclusion of small farmers in the subsidy scheme for small-scale irrigation. As a result of the state's support, a number of small farmers' cooperatives were organized and upgraded.

To strengthen the natural resource base, the programme "Recuperation of Degraded Soils" was launched. To encourage technological innovations, activities of the Instituto Nacional de Investigación Agropecuaria (INIA) were supported with greater funds, and the Foundation for Agricultural Innovation was revitalized. For forestry development, National Forestry Corporation was strengthened. The main rural development agency, INDAP, was decentralized.

In the third phase of democratic government, a participatory approach through Round Tables with farmers was initiated, and agricultural insurance was introduced. An innovative programme of securitized bonds for the forests to be raised by small farmers was set up. After appropriate sanitary measures were taken, bovine meat exports were encouraged. A new programme to assist the dynamic agriculture by constructing greenhouses, on-farm processing facilities etc., was introduced. Major research centres were transferred to the Ministry of Agriculture.

The impact of these policies was visible. Gross Agricultural Produce followed an upward trend. Public expenditure on promotion of productive activities grew significantly in this period. Emphasis was also placed on rural infrastructure and social services. Irrigation development, particularly drip irrigation, was extended significantly. Agricultural exports also increased. Finally, a measurable drop in poverty, from 38.8 percent in 1990 to 12.3 percent in 2000, was achieved.

5. Lessons Learned

Certain lessons clearly emerge from Chile's experience. The government's role in agriculture goes beyond rule setting and ensuring their execution. It is important to provide strategic guidance and control. With successive governments taking these functions seriously during last two decades, they have strengthened Chile's agriculture, especially its three pillars: fruits, forestry and dairy. This does not mean that macro policies can be ignored. The exchange rate, interest rate, minimum wages and monetary policy affect agriculture as much as, if not more than, the other sectors.

Even in the 'least distorted' agricultural sector, as in Chile's, some interventions, such as price bands, are necessary and useful for market stabilization. Similarly, parastatals in the sector could contribute to agricultural productivity, especially on the small farm. Agriculture has a strong capacity to respond to market signals. A stable market environment adds to this capability.

In a dualistic agrarian structure, the state will have to have different policies; some attuned especially to support and develop the small farm sector and backward areas. The state's role in identifying and supporting the 'winners', i.e. those where the country has comparative advantages, through explicit support by the public sector is in the long-term interest of the country. As Chile

has shown even within the World Trade Organization regime, there are policies that can support agriculture without causing major market distortions.

ANNEX 2 PROFILE OF ETHIOPIA

Since 1930 Ethiopia has witnessed three different regimes, with three distinctly different approaches to agricultural development. The government of Emperor Haile Selassie (1930-1974) ruled a centralized state and inward-looking economy. It set the goals of modernization of the society and industrialization of the economy. The government protected communal agriculture in some parts of the country, but encouraged feudal institutions in the agricultural sector. Its successor military government (1974-1991) professed Marxist-Leninist ideology, which was resented by the peasantry and, like its predecessor, could not solve the problems of food security and rural poverty. The present government (from 1991) experimented with the policies guided by the Washington Consensus on liberalization and globalization, but again without much success.

1. Key Features of the Country

Ethiopia is located in the tropics, with different regions varying in altitude and rainfall. Agriculture is the key sector, employing 85 percent of the labour force and accounting for 90 percent of export earnings, mainly by coffee. Small-farm agriculture has low productivity. Almost the whole of agriculture is rain-fed, with wide annual fluctuations in output resulting from variations in rainfall. The country faces frequent droughts, culminating occasionally in serious famines. Infrastructure is poor and credit and marketing institutions are very weak, which act as serious constraints to agricultural growth.

2. Policies and Strategies under the Imperial Regime (1930-1974)

The Imperial Government pursued economic policies with the overall objective of industrialization and modernization. Starting in 1959, five-year development plans were formulated to give direction to the economy to meet above objectives. Due to the small domestic market, foreign investment could not be attracted, and the policies remained inward-looking. Several incentives in the form of tax rebates and subsidies were provided to the domestic industries.

While communal agriculture was protected in the northern areas, in the central and southern areas private land ownership was introduced. The nobility, the Orthodox Church and government officials took advantage of the new system and preempted large chunks of land. A class of absentee landlords owning large commercial holdings emerged. The small peasants lost their land in the process.

As a part of the agricultural development strategy, comprehensive agricultural projects were introduced, emphasizing a package of modern inputs and practices. However, as the grain markets were not developed, agricultural prices remained depressed and acted as a disincentive for increasing production. Efforts were also made to encourage commercial dairying and agro-processing by providing tax incentives and preferential access to credit. Overall, priority was given to commercial farms, which registered steady growth, while the bulk of the peasantry remained disadvantaged and poor. Agriculture received meager support from the national budget.

During this period the country showed a relatively high growth in gross domestic product (GDP), reaching 4.1 percent per year. Industrial growth also picked up, reaching 10 to 12 percent growth per year. However, annual agriculture growth remained at 2.1 percent, i.e., less than the population growth of 2.5 percent. Furthermore, the vulnerability of rain-fed agriculture to rainfall fluctuations could not be corrected, resulting in widespread famines brought on by a series of droughts. The worst was that of 1973-1974, which led to the downfall of the Imperial regime.

3. Policies and Strategies under the Military Government (1974-1991)

The military government that seized power in 1974 declared socialism and pursued those policies that they considered essential for ushering in an anti-capitalist, pro-poor and egalitarian society. As a part of the economic policies dictated by these considerations, banks, insurance companies and large and medium industrial enterprises were nationalized. In foreign trade, protectionist policies were adopted with fixed foreign exchange rates. Prices of all major commodities were fixed and essential commodities were rationed. Resources of the state were to be allocated by a National Commission for Central Planning.

In the agriculture sector the policies were equally draconic. All land was declared as public property. Tenancy and hired labour in agriculture were abolished. Large commercial farms were converted into state farms, and they were given high priority in the allocation of inputs and agricultural machinery. The self-cultivating small farmers were brought under the authority of the Peasant Associations (PA), each covering 800-hectares or 250 households. The PAs had the authority to redistribute land among their members, depending on the size of the household, and they were encouraged to promote cooperative farming. A range of incentives was provided to these farms. Despite all inducements, however, producers' cooperatives did not gain the acceptability of farmers. As there were hardly any non-farm activities in the rural areas, and with population pressure on land, the holdings of self-cultivating farmers progressively declined, from 1.65 hectares in 1974/75 to 1.31 hectares in 1983/84. Productivity on these farms was low, work was arduous and incomes were declining.

With falling production, food grain prices soared within a few years of the establishment of the 'socialist' regime. The government resorted to compulsory delivery quotas for the peasants. Even private traders were asked to surrender half of the procured grains to the state-owned Agricultural Marketing Corporation. The procurement prices were set at three levels – the lowest for peasant cultivators, slightly better prices for producers cooperatives, and the highest for collective farms.

A policy of villagization was pursued with disastrous results. Under this policy thousands of farmers were uprooted from their ancestral habitat and herded into overcrowded villages. It had a serious impact not only on agricultural productivity but also on the health and cultural life of the settlers. By 1988 most families were living in these crowded villages, with limited land for cultivation or grazing for their livestock.

With all of these state interventions, the budget allocated for agriculture was paltry (varying between 6 and 15 percent of the state budget). A disproportionately large share was earmarked for state farms. There was no investment in improvement of degraded land either by the state or by the impoverished peasantry.

The net outcome of these policies was that agricultural growth was stalled and poverty and food insecurity became widespread. The overall GDP grew at the rate of 2 percent per year and agricultural production 0.6 percent, while the population was growing at the rate of 2.9 percent. The country had to depend on food aid to provide a modicum of food security to the people, as the crisis in the agriculture and rural livelihoods deepened. The serious famine of 1983/84 resulted in the total loss of credibility of the government.

4. Policies and Strategies in the Post-reform Period (1991 to present)

The regime, which took power in 1991, started pursuing the policies that were radically different from those instituted by previous governments. Overall these policies followed what is known as the 'Washington Consensus', which includes all the features of Structural Adjustment Programmes: devalued the exchange rate, gave licenses to domestic banks and insurance

companies, liberalized product markets, deregulated prices, reduced subsidies and brought down duties and taxes.

The policy reforms in agriculture were proclaimed in the context of the Agriculture Development Led Industrialization Policy. The focus is on improving productivity of smallholder agriculture. The land continues to be under state ownership, although the regional governments are giving guarantee that the land registered under an individual will not be redistributed. It remains to be seen if the registration could provide enough incentive to farmers to invest on the land they are using.

The government also launched a special poverty reduction programme comprising infrastructure development, rural development, food security and capacity building. There are moves towards decentralization and the devolvement of power to lower administrative units. Many of these initiatives are being frustrated because of lack of independent grassroots organizations.

According to the current policy, agricultural growth is to be centred on the improvement of productivity in the smallholder sector. To achieve this objective, a 'participatory agricultural demonstration and training system' was introduced on a massive scale, among other measures. The emphasis was on increasing fertilizer use and improved seeds. A large number of functionaries were trained. Due to these efforts, the use of chemical fertilizers has improved significantly, but the spread of improved quality seeds is not satisfactory, mainly because of weaknesses in the research system and in the research-extension-farmer linkages. There were hardly any private or farmers organization-based extension efforts in the country. Now, this gap is being filled in and a pluralistic approach is being encouraged.

The state-owned Commercial Bank of Ethiopia is entrusted with providing credit, mainly for inputs (e.g. fertilizer). The cooperatives, local government officers and microfinance institutions extend credit to the farmers for this purpose. However, in this arrangement the role of private input dealers has been relegated and a lot of burden is put on extension agents. Similarly, fertilizer distribution is progressively coming under the control of the Agricultural Input Supply Enterprise, a parastatal. Private-sector participation in the distribution of fertilizer and improved seed varieties has almost disappeared. The absence of competition in production and distribution of inputs has resulted in high costs and poor service delivery. This is in contrast to many countries in Africa where the private sector is quite active in the delivery of inputs.

Output markets have remained thin and underdeveloped. Small grain traders, who have limited resources, lack warehousing facilities and have limited access to market information, dominate the markets. The major actor in this area is the parastatal Ethiopian Grain Trade Organization. However, this organization has not been able to make an impact on the grain market mainly due to under-funding. In recent years cooperatives have been promoted to handle grain trade. An Ethiopian Commodity Exchange has also been launched to bring order and transparency into grain marketing.

The biggest marketing challenge has been the high price volatility. The situation has worsened after the reforms. Significantly, the price of maize (preferred by the rural poor) is more volatile than wheat (consumed by the better-off segment of the population), and producer prices are much more volatile than consumer prices. A good harvest leads to price collapse, and supply shortfall leads to soaring prices. Price stabilization measures have not been given needed attention. While commodities such as flour, cotton and sugarcane are given generous incentives, food grains have not received this type of support.

The budget allocation to agriculture has improved significantly, with its share in the total budget climbing from 8 percent in 1951 to 17 percent in 2005. But a large part of it goes to salaries and

wages. Some of the key sectors, such as irrigation, and programmes such as land improvement, are totally neglected. Some of the enterprising farmers have benefited from the numerous government programmes and schemes, but the bulk of the peasantry continues to be struggling with poverty. The situation has worsened because, in the absence of employment opportunities in the non-farm sector, pressure on land is increasing and holding size is continually declining.

5. Major Impacts

During recent years there has been significant increase in GDP growth, especially compared with the period under military rule. Performance of agriculture, at 2.4 percent per annum, also suggests significant improvement. But agricultural growth is driven almost exclusively by area expansion rather than by productivity improvements. Food grain production has improved but the sharp year-to-year fluctuations in production have not been subdued. Overall, the country is able to produce only two thirds of its grain requirements and depends mainly on food aid for the rest. Nearly 8 million beneficiaries were brought under the Productive Safety Net Programme in 2008. Most of them had been receiving food aid or participating in food-for-work programmes for decades. Apparently, the beneficial effect of the economic reforms has not yet touched their lives.

Added to the worries of the poor is the unprecedented increase in prices: inflation in the country is one of the highest in sub-Saharan Africa. The increase in food prices (on a monthly basis) reached 35 percent by June 2008. The inflationary pressure, which is caused by the failure of domestic supply to match demand, has affected not only the poor but also macro economic stability, with negative impact on investment and growth.

6. Lessons Learned

The case study of Ethiopia provides objective lessons on the role of public sector institutions in agricultural development. It is clear that the semi-feudalistic agrarian structure, with large estates owned by absentee landlords, could not result in a viable agriculture. The same is true for the 'socialistic' form of agrarian organization with an autarkic system in international trade. Forced collectivization and resettlement have proved to be counterproductive. The total negation of markets in prices and trade resulted in further impoverishment of an already poor peasantry.

More to the point, the doctrinaire application of a liberal regime with full faith in privatization and globalization had its own pitfalls. In an economy where markets are thin, credit and marketing institutions underdeveloped, infrastructure is in woeful conditions and trained manpower is scarce, dismissing or undermining the role of the public sector would deprive the small peasantry of whatever limited assistance it could have received.

On the policy front several lessons are clear. If small farm agriculture is to prosper, investment in infrastructure is a must. Equally important are the measures for reducing risks – the natural risks by extending irrigation and effectively managing water; and market risks by crop and livestock insurance and/or minimum support price and accumulation of a buffer stock capable of enabling policy makers to engage in 'open market operations' to counter periodic scarcity and gluts. Finally, as the experiences of successful Asian countries have shown, small farm agriculture needs institutional support, mainly from the public sector, in the areas of research, extension, credit and marketing. Hasty privatization and neglect of public-sector institutions in these areas will do more harm than good, especially to the marginalized and vulnerable populations.

ANNEX 3 PROFILE OF HUNGARY

Before World War II, Hungary was an agrarian economy, with agriculture contributing significantly to the country's gross domestic product (GDP) and exports, and employing a large proportion of the work force. The agrarian structure was 'bipolar', with a few large estates dominating the sector, and numerous small farmers producing for their own needs.

Subsequent developments in agriculture can be discussed in four phases: (i) 1945-1967, a period of Soviet-type agricultural policy; (ii) 1968-1989, the 'Hungarian Agricultural Development Model' of development; (iii) 1989-2004, a transition from socialism to a market economy; and (iv) 2004-2005 EU membership experiences.

1. Soviet-style Agricultural Policies (1945-1967)

During this period, Hungarian agriculture followed the Soviet pattern. After World War II, Hungary's economy became a command economy characterized by state ownership of means of production, central planning and emphasis on the development of heavy industry. There was a determined push to collectivize agricultural holdings, and once enrolled, farmers were not allowed to leave the collective farms. There were compulsory production quotas determined by the central authorities, and procurement prices were deliberately kept low. Paltry investment was made by the state in agriculture.

Certain reform measures were adopted after the death of Stalin in 1953, but they proved short-lived because the basic tenets of the economic system remained unchanged. As a result of these coercive and collective measures, agricultural production stagnated. Despite state controls, imports of agricultural products jumped eight- to nine-fold, while exports hardly increased. The plight of agriculturists worsened, especially the small farmers. Moreover, the economy as a whole regressed, compared to the pre-war period.

The Hungarian Revolution of 1956 triggered some changes in the collectivization process. Instead of coercion, economic incentives were offered to the farmers to join the collectives. Some decentralization was introduced in framing agricultural plans for the collectives, and the cooperatives were granted some degree of autonomy. Higher purchase prices for agricultural output were introduced. The net outcome of these relaxations was a spurt in production. Not only domestic demand for most of the agricultural commodities was satisfied, but sizeable quantities were exported, making Hungary an important agricultural exporting country. The higher rate of agricultural growth also benefited the state's budget. However, the overall economic scene was disappointing.

2. The New Economic Mechanism (1968-1989)

The next phase in Hungarian agriculture, termed the New Economic Mechanism, lasted from 1968 until 1989. It started with the recognition that the country's economy was stagnating. As far as agriculture was concerned, market-oriented reforms were introduced, giving much greater autonomy to cooperatives to plan their activities. The state intervened through what were called 'economic regulators', e.g. prices, taxes, credit. The state also provided large amounts of input and output subsidies, as well as special grants for backward areas. (Subsidies accounted for 10.5 percent of the agricultural budget.) Emphasis was laid on modern breeding and cultivation practices. All of these measures boosted agricultural production, which recorded an annual growth of 4.6 percent during 1971-1975.

During this period significant changes took place in the relationship between the large cooperative farms and small family holdings. The cooperatives provided modern means of production to the small family farms; the latter specialized in intensive and high-value agricultural production. In addition, cooperatives undertook other ancillary activities, in trade, transport, processing, etc. The income from these activities helped in their agricultural production activities. The state's investment was directed through cooperatives, which assisted small farmers with their enhanced resources. The owners of small farms had assured employment and income, and several other benefits from the large cooperative farms, while their own efforts on the small plots yielded additional and substantial income. As a result, not only agricultural production increased, but farm incomes improved significantly, and the acquisition of consumer durables by farmers increased manifold.

Among the three forms of agricultural organization existing in the country viz., collectives (state farms), cooperatives and the small household plots, cooperatives registered the highest rate of growth in production. This was due to several factors: the rate of investment was increasing and most of it was in machineries; the use of fertilizers and chemical increased substantially; and new and highly productive varieties of wheat and maize were introduced. A unique division of labour took place between cooperatives and the small farms, with the latter specializing in the production of labour-intensive products, such as fruits and vegetables, and the former concentrating on grain production.

This happy situation did not last long. At the beginning of the 1970s, more orthodox leftist views started asserting themselves. Proponents of these views were successful in forcing a turnaround in the policies in 1978-1979. A return to centralized control took place, resulting in a stifling of innovation and the spread of inefficiency. At the same time, the government was forced to integrate with the world economy by its creditors, namely the western banks. The situation was further complicated by the rise in oil prices. There was a serious liquidity crisis. The government was forced to join the International Monetary Fund and the World Bank. With this, came the Stabilization Programme with all the elements of the so-called Washington Consensus. With greater austerity in government expenditure, investment fell, and with that production and exports also declined. The policy resulted in a 'drain' of agricultural incomes, which could not be contained by a high level of subsidies. The latter were predominantly to unfavourable agricultural regions and to exports, and not for inputs or investment.

With a decline in investment, cooperative farms also became less profitable. Only the large collective farms showed profit, as they started giving greater importance to non-agricultural activities. The weakness in productive activities was further exacerbated by weak marketing and distribution links. The task of creating a free-market system posited on centralized decision-making authorities brought to fore the disadvantages of both systems. Basic issues of the role of government in the management of economy, the extent of liberalization and privatization, and a clear definition of property rights could not be resolved.

Despite all the handicaps, agricultural growth continued mainly because of the investments made and technological back-up provided during the previous period. The continuing growth of agriculture was reflected in larger exports and thus contributed to domestic resources as well as resources for debt servicing in those difficult times.

3. Transition from a Centrally Planned to a Market Economy (1990-2004)

By the end of the 1980s the Soviet empire had started disintegrating. The effect was felt in Hungary. The legal and organizational frameworks of the one-party system could not be sustained. In 1990 free elections were held, and the new government opted for a market-oriented economy,

and full integration with Western Europe. The adjustment programme launched by the new government comprised large-scale privatization, down-scaling of government, and promotion of foreign investment. The export sector was recognized as the leading sector. The World Bank supported these efforts by granting the first Structural Adjustment Loan. The International Monetary Fund supported the stabilization measures. The government agreed to key policy and institutional reforms consistent with the Structural Adjustment and Stabilization norms.

In agriculture the reforms were translated into a shift to private ownership of land, which was thought to provide better incentives. It was also decided to provide compensation to those who had lost their land in previous collectivization and cooperatization drives. Although restructuring took more time than anticipated, by 1996 the large-scale restructuring of collective and cooperative farms and the privatization of agricultural holdings were nearly complete. However, this process also resulted in fragmentation of holdings. Consolidation of ownership holdings and support to farming structure required greater and consistent support from the government, which was not available.

Since 2004, in compliance with the General Agreement on Tariffs and Trade (GATT) on Agriculture, the Structural Adjustment Programme and the conditions for joining the EU, government subsidies to agriculture were drastically reduced. The subsidy level was mainly determined by provisions in the EU budget. Thus, direct subsidy to agriculture was reduced, but the rural development subsidies provided in EU's Common Agricultural Programme (CAP) increased.

The transition from a centrally planned system to a market economy had a serious impact on the agricultural sector, in terms of production as well as on the structure of land holdings. It also had an impact on the product market of agricultural goods. By and large the sector was a loser, mainly because the transitional phase was not managed properly and was guided by ideological considerations. Both agricultural and animal husbandry production declined sharply. Fertilizer use declined significantly, and privatization of agricultural extension services did not benefit the majority of producers. The state's share in agricultural research also declined. Agricultural wages declined and employment decreased. Share of agriculture in GDP decreased from 13.7 percent in 1989 to 4.3 percent in 1999; Employment declined from 17.4 percent to 7.1 percent in the same period; and exports from 12.8 percent to 8 percent. The livestock sector was affected even more seriously.

The most drastic changes took place in the land ownership structure. Collective and cooperative farms were broken up and the land was transferred to private hands, mostly to those whose land had been requisitioned in the previous socialist regime. The transfer was affected by compensation vouchers, which could be used for the purchase of agricultural land. This method led to the purchase of small pieces of land by voucher holders. The result was small and fragmented holdings. However, since leasing of land was permitted, newly acquired land by individuals was leased-in by larger corporations, and in a few instances, to the cooperatives. The net result was a concentration of operational holdings in large farms, and separation of ownership and operation of land holdings.

The sad plight of agriculture was inevitable, as the new policy was characterized by a dominance of outdated ideologies, the inability to learn from the experience of other countries, the uncritical acceptance of the foreign advisors unfamiliar with Hungarian reality, and an almost maniac aversion to collective and cooperative farms.

In line with the agricultural production activities, the state's role became less important in marketing of agricultural output, including distribution of food grains. Large multi-national

operating chains of hyper-stores started dominating the scene. However, the small retailers could also continue in the market, supported by central buying and distribution arrangements. Consumers tried to protect their interests through General Purchase and Sales Cooperatives, which played the role of bulk purchasers and distributors. Consumers also benefited due to greater emphasis on quality by large and small distribution agents.

4. EU Membership Period (2004-2005)

Hungary applied for EU membership in 1994, and it was declared eligible in 1998. Thereafter several measures were taken to incorporate the EU's legal stipulations, rules, directives etc., into its system. One of the most important developments on the agricultural side was eligibility for the EU's subsidy amount under the latter's CAP. Until 2005, approximately 210,000 farms received direct CAP subsidies. The number and amount are gradually increasing and may reach the level of subsidies given by the old regime. As it is, government subsidies together with EU subsidies account for 64 percent of the income of the farms. While agricultural producers benefited by larger subsidies, with liberal trade policies they also had to face stiffer competition from foreign competitors not only in the international markets but also in the domestic markets.

The benefits of subsidies and other provisions of the EU were received mostly by the larger farms; the small part-time farmers were adversely affected by market liberalization. Similarly, crop producers benefited by these arrangements, but producers of horticultural crops did not. The association with the EU made farmers more environmentally conscious.

The years immediately following EU membership (2004 and 2005) witnessed a substantial increase in cereal production. However, it was mainly because of favourable weather. Yields of the principal cereal crops (wheat and maize) were lagging behind EU-15 averages. In addition, producers could not take full advantage of bumper crops due to the high transport costs and lack of adequate storage facilities. The structure of the livestock sector was changing, with a decline of number of animals for slaughter. Milk production was not much affected – although the number of cows declined, milk yields improved.

Hungary's position as an important agricultural exporter continued, and its balance of payments on agricultural trade account continued to be positive.

5. Conclusions

Hungarian agriculture underwent three major systematic changes; a socialist phase; a transitional phase to market economy; and an integration phase with membership in the EU. In all of these phases, political consideration outweighed economic considerations.

The socialist phase (1945-1989) in Hungary was not as disastrous as the other centrally planned countries in central and eastern European countries or in the Soviet Union. This was because of the innovative ways in which central planning was carried out. Among several factors responsible for the exceptionally good performance of the agricultural sector during that period, the following are the most significant. In the first phase even for the members of cooperatives (which accounted for the largest share of land under cultivation), households plots were permitted and were encouraged to grow more labour-intensive high-value crops (i.e. fruits and vegetables). Secondly, the government provided sufficient investment in agricultural plants and machinery. Thirdly, produce prices were kept at remunerative levels. Fourthly, agro-processing and other ancillary activities were encouraged. Finally, sufficient attention was paid to provide education and health facilities to rural people.

However, there were serious weaknesses in the system, some arising from defective macro policies and others specific to agriculture. The main handicap at the macro policy level was insensitivity to the external environment, although Hungary had a large foreign trade component. Mismanagement of budgetary resources led to heavy, short-term and high-interest-bearing external loans. As far as agricultural policies were concerned the major weakness was an exclusive attention on quantity, and neglect of the cost of production or quality of product. Institutional support for efficient marketing was also lacking. The planning authorities, in general, were insensitive to trends in domestic and external markets.

In the transitional phase (1990-2004), some of these lacunae in agriculture were sought to be removed. The emphasis shifted to market-oriented policies, but the process of liberalization was gradual – no ‘shock therapy’ was attempted. Government policies were directed in three areas: (i) changes in institutional and regulatory arrangements to enhance the functioning of the markets; (ii) privatization of major means of production in agriculture and promotion of private enterprise in input supply and agro-processing; and (iii) introduction of supportive programmes for agricultural producers, processors and traders.

This period of transition, especially the first five years, could be considered a major success. Within a short period of time almost complete privatization of land was achieved, a market-consistent incentive framework was introduced and deep reforms in government institutions carried out. However, the process inflicted a heavy cost on some sections of the farming community, especially the small farms, as they could not compete in the changed market environment. The situation was aggravated, as the government did not have enough resources to invest in agricultural infrastructure. The financial system was not attuned to the new agrarian structure. Privatization of land also meant fragmentation of land ownership, separation of land ownership from land use, and a sharp decline in profitability of agriculture production and a consequent drop in farmers’ income.

Accession to the EU promised higher income, stable prices and expanding markets. So far (i.e. until 2005), these hopes have not been met. To take advantage of EU membership, the country needs a development strategy for agriculture; timely institution building; careful financial budget planning; and strengthening of potentially competitive sub-sectors. Above all, it will require more responsive devolution of power to local administration, and much greater attention to research, extension, education and training. The government will have to equip itself to establish the ground rules and facilitate smooth operation of markets.

6. Lessons Learned

- Macro policies matter. Because of reckless fiscal policies, Hungary accumulated large short-term foreign debts, which constrained its options for investment in social development, infrastructure development, etc.
- Systems cannot take sharp adjustments without adequate preparation. In this respect Hungary was in a better position because in the later years of the socialist phase the policy framework had started incorporating elements of a market economy.
- Privately owned small farms are quite productive, especially in producing high-value labor-intensive crops. More so if the farmers have assured income from some other sources – in the case of Hungary, from their work in the cooperative farms.
- Despite the unfavourable environment of the market economy, cooperatives could stand on their own in agricultural production, or could enter into other ancillary enterprises, because of heavy public investment in these entities during the previous regime.
- Without proper institutional support in marketing, credit, etc., the country could not benefit, at least in the initial stage, from its integration with the large EU market.

ANNEX 4 PROFILE OF INDIA

1. Main Features of India's Agricultural Sectors

India is a large country with a population of over 1.1 billion. There is a substantial number of poor households, although their proportion in the total population is declining. Currently nearly 26 percent of the population is below poverty line. There is pronounced social stratification, which is also reflected in unequal access to land and other resources. However, the country is a stable multi-party democracy, with village-level institutions recognized as the primary units of governance.

Nearly 60 percent of population lives in villages. In the rural areas agriculture is the dominant occupation. Around 56 percent of the country's work force is engaged in agriculture, which is primarily smallholder agriculture. Around 85 percent of agriculture holdings are small or marginal (of less than 2 hectares), cultivating nearly 50 percent of the area. Nearly 45 percent of cultivable land is irrigated. Cereals are the main crops. In recent years crop diversification has started to a significant extent, and sub-sectors such as dairying, animal husbandry, fishery, and horticulture are gaining importance.

An important feature of Indian policy is that food security is considered a primary responsibility of the state, and the sections that follow discuss the role of the public sector in meeting the objectives of growth and equity in the rural sector.

The discussion covers four periods of recent history: (i) the period preceding the "Green Revolution", from the late 1940s to middle of the 1960s, when the country was plagued with food shortages; (ii) the period of the "Green Revolution" from the mid 1960s to the end of the 1980s, marked by substantial increases in food production; (iii) the period of "economic reforms" from the beginning of the 1990s to the end of the 1990s, with emphasis on liberalization and globalization, also characterized by the neglect of agriculture; and (iv) the current period from the beginning of this decade onwards when important changes have been taking place in agricultural policies and supportive institutions.

2. Period Preceding the Green Revolution

On the partition of the country into India and Pakistan in 1947, India inherited a grossly food-deficit economy. As relations with its neighbour were none-too-happy, the developed countries were not forthcoming to assist, and the country did not have the capacity to import food in large quantities. Increasing food supplies from domestic sources therefore became a primary objective of the country's agricultural policies. With a large number of poor households, avoiding hunger and providing food security became other major objectives. To achieve the latter objective a variety of measures, from price regulation to rationing, were taken.

The main thrust of the macro policies during that period was rapid industrialization supported by protectionist measures. Agriculture was not at the centre of the development strategy. Two major initiatives impinging on the rural social and economic structure were taken during that period. The first was a nationwide programme of community development and national extension. The basic idea of the community development programme was to prepare village communities for comprehensive development with their own efforts, with the state playing a facilitating role by providing a village-level functionary and some financial and technical support. After a promising start the programme faltered and then petered off. The main reasons were: (i) the line departments in the states did not cooperate with the village-level functionaries; (ii) the programme became a

victim of ‘targets’ without proper attention to community mobilization; (iii) village societies were not as cohesive as was assumed; and (iv) neither technological back-up nor price incentives were ensured to increase in productivity and income.

India had inherited an iniquitous land-holding structure. The land reform programme was addressed to mitigate hardships to the small cultivators and give them incentives to increase production. Major components of the land reforms were: (i) abolition of functionless intermediaries; (ii) protection of tenants’ rights and regulation of rent; (iii) creation of ceiling on land holdings and distribution of surplus land among marginal farmers and landless labourers; and (iv) legislation to enable tillers of land to acquire ownership rights.

The objectives of the land reforms remained largely unfulfilled, primarily because beneficiaries were not mobilized and the bureaucrats were expected to implement such far-reaching changes on their own. In addition, with almost exclusive emphasis on equity, measures to improve productivity were not taken to any meaningful extent. However, land reforms did help in ‘clearing the decks’ in some important respects. Further expansion of holdings by the larger landowners was stopped, the middle peasantry was strengthened, and a more or less uniform land tenure system came into existence throughout the country.

One of the major achievements of this period was the expansion of irrigation. Most of the expansion took place in surface irrigation, built and managed by the federal government. The benefits from surface irrigation could be shared by all holdings irrespective of their size. The federal government also kept in mind the need for expansion of irrigation in backward regions. Despite these advantages, irrigation expansion could not result in a commensurate increase in production. The problems were partially technical in nature – at the system stage, but also at the user level. In addition, complementary activities at the watershed level were not undertaken, but more importantly, sufficient attention was not given to develop appropriate technologies and ensure incentive prices.

3. The Green Revolution and After

The neglect of agriculture in the 1950s, with emphasis on industrialization, started showing its ill effects in the early 1960s. Availability of food grains fell far short of requirements. Periodic draughts and the unhelpful stance of developed countries with a food surplus compounded the difficulties. The government took the bold decision to reach food self-sufficiency with domestic production, and the country succeeded in achieving this objective in a remarkably short period.

The success was all the more noteworthy, as the growth in production was not due to expansion of cultivated areas but to increased productivity of land. The strategy was based on popularizing high-yielding varieties (HYV) of wheat and rice. Critical factors in ensuring success of the new HYV-based technology were: (i) rapid enlargement of area under irrigation; (ii) continuous adaptation of old HYV and release of new varieties; (iii) adequate provision of modern inputs, especially fertilizers; (iv) provision of adequate credit; and (v) assurance of minimum guaranteed prices by the state.

Policy measures played an important role, particularly in the areas of technology generation and agricultural prices. Through deliberate and systematic efforts, quality of research personnel was improved, organizational changes were effected to take advantage of the country’s diverse regions to test and adapt varieties for different areas, incentives were provided to the scientists, and a more focused research agenda was developed for the country as whole. The agricultural research establishment was strengthened to select, cross, adapt and popularize useful varieties, particularly in wheat and rice, for the irrigated areas.

The objective of the price policy was to ensure stable and remunerative prices to producers, where advances in technology promised breakthroughs in yield. At the same time, consumers also received the benefits of increased productivity. A complementary package of minimum support prices, procurement prices, buffer stocks, and a public distribution system was introduced. For each major policy thrust, institutional arrangements were put in place to implement policy measures on the ground.

While achieving remarkable success in food grains production, the country also had to pay some prices. With the emphasis on wheat and rice, other crops were neglected, from the point of view of technology generation and remunerative prices. As the strategy was based on adequate and controlled water supply, it resulted in growing inequality between the irrigated and rain-fed areas. Excessive use of fertilizers and chemicals led to deterioration in the quality of land and water.

4. Economic Reforms Period

By the end of the 1970s agricultural productivity, even in the Green Revolution areas, had reached a plateau. The gap between the availability and requirements of food grains was widening. The overall economic situation worsened with the first oil shock and dwindling foreign exchange reserves, and inflation was soaring. These conditions forced a change in the policy stance. Some measures of liberalization in industrial and foreign trade policy were introduced. However, the basic premises on which the earlier ‘pre-reform’ policies (i.e. ‘commanding heights for the public sector’) were based remained more or less unchanged. Even with the limited reforms, the economy revived. Inflation came down and industrial production improved.

However, this proved to be a brief respite. With the second oil shock and severe droughts of 1983-1984, the economy again started limping. A new set of reforms was introduced in the beginning of the 1990s. Economic reforms introduced in 1991 are qualitatively different. The principles underlying the reforms are greater reliance on the market for allocation of resources, emphasis on privatization and promotion of domestic and global competition. The need to curtail the fiscal deficit is recognized. While these principles are common to several other countries introducing reforms, India’s approach is distinguished by its sequential and cautious approach.

The new phase of reforms was initiated in the foreign trade sector to face the serious foreign exchange crisis. Moves towards a liberal and open trade regime were initiated. This was followed by reforms in the industrial and financial sectors. Subsequent to liberalization of foreign trade, the rules for the entry of foreign capital were also relaxed. With a democratic and multi-party polity, a measure of consensus building is imperative. The capacity of the enterprises in rural as well as urban sectors to absorb shocks also needs to be taken into account. These considerations prompted a gradual and cautious approach to reforms.

The reforms since 1991 have proved to be reasonably successful at the macro level. They ushered in an era of high rate of growth in gross domestic product (GDP), continuously for 15 years, and put the country in the category of one of the fastest growing economies in the world.

5. Reforms in Agriculture

Against the backdrop of the slow pace of reforms in the country, policy changes in agriculture were even slower. The government was keen that nothing be done that would jeopardize food security. There was a powerful lobby of medium to large farmers who did not want to yield any advantages they might be extracting from the system. The state governments, which according to the Indian Constitution have principal responsibility for agriculture, were dragging their feet in implementing the reforms. At the same time distortions in the agricultural sector were not as glaring as in most of the countries opting for reforms.

Agriculture reaped the benefits due to reforms in the non-farm sector – e.g. dismantling protective measures for industry, minimizing the fiscal deficit, and realigning the external value of domestic currency. This was evident from the improvement in the terms of trade between the agricultural and non-agricultural sectors. However, the government did precious little to reduce interventions in commodity prices, or in domestic and foreign trade. There was huge increase in subsidies for food and fertilizers. Public investment in agriculture and rural infrastructure slumped. Public-sector institutions in credit and marketing relegated their development role to the background and aimed at ‘profit maximization’. Many small farmers could not obtain support from public institutions to face the competition, even for the products for their own use. In short, sectoral policies addressed to agriculture ignored the on-the-ground realities.

The reduction in the government’s share in capital formation, the ‘market orientation’ of the supportive institutions, and the neglect of rural non-farm sector had adversely affected the agriculture sector and rural development. The net result was deceleration in agricultural production to less than 1.8 percent per annum, compared to 2.4 percent per annum in the previous decade. Additionally, with the declining role of government in surface irrigation and greater reliance on ground water sources, the small farmers who did not have resources to own tube wells found their access to irrigation reduced. Barring a few crops, all other crops recorded lower growth rates in output. The rate of growth in food grain production had fallen short of the rate of growth of the population. Small and marginal farmers were lured by market signals to expand the area under non-food crops, but they did not have capacity to deal with market risks. The then existing system of crop insurance did not cover their risk to any meaningful extent.

6. Current Phase of Economic Reforms

By the turn of the century, the Indian economy was poised for a high rate of growth. The growth, however, was spearheaded by the industry and services sectors. Agriculture was virtually stagnating. As a result, the rate of poverty reduction was disappointing.

Government agencies and research scholars identified the major constraints to agricultural growth, which included: (i) deterioration of the production base of land and water; (ii) stagnation in the yields of field crops, as well as in the output of sub-sectors (e.g. dairying, fishing); (iii) declining efficiency of inputs used in agriculture; (iv) widening income gap between agricultural and non-agricultural workers; (v) greater vulnerability faced by agricultural workers; and (vi) decay in self-help institutions.

One of the major causes identified for stagnation in agriculture was the decline in public investment. The main reason was the growing amount of subsidies which absorbed a progressively larger share of the public resources. During the early to mid 1980s, the level of public investment in agriculture was 3.5 percent and the level of agricultural subsidies was 4 percent of agricultural GDP. In the beginning of this century (2001-2003) public investment declined to 1.8 percent of agricultural GDP and the share of subsidies rose to 7.4 percent. Attempts are being made to correct this situation.

Another area which needed urgent attention was agricultural research and extension. India has high-caliber scientific manpower and a network of research institutions. Nevertheless they were not able to contribute to agricultural growth because the content of research was not related to the demands of the sector. The organization was bureaucratic and top-heavy, and not enough resources were allocated to the public research system. Private-sector research made some headway in bringing out improved quality of seeds, as well as application of biotechnology, for commercial crops. A review of the research system by a high-powered committee has recommended that agriculture research should remain primarily in the public domain, with open

access to all users. A decentralized and participatory approach is suggested for extension of agriculture research to the producers.

Another weakness identified was the working of the delivery mechanisms, particularly for credit and marketing. In small-farm agriculture, support provided by the institutions in these areas is very important. The strategy of the government until the 1960s and 1970s was to strengthen the cooperative sector. As cooperatives became more susceptible to political pressure and bureaucratic interference, the public sector institutions were given prominence. With the advent of economic reforms, greater emphasis was placed on market orientation of the supporting institutions. However, such orientation was interpreted by the public institutions as 'profit maximization' relegating their supportive role *vis a vis* the small-farm sector to the background. This approach is being corrected, and various measures are being taken to make these institutions, particularly financial institutions, more inclusive.

One area where no significant progress has been made is the management of the food economy. The food policy was based on four interrelated measures: (i) a minimum support price to protect agricultural producers from sharp declines in prices; (ii) a procurement price to procure food grains at near-market rates; (iii) a buffer stock to meet sharp fluctuations in domestic supplies; and (iv) a public distribution system to enable vulnerable farmers to obtain food grains at an affordable price. These measures were compromised once the distinction between Minimum Support Prices (MSP) and Procurement Prices was erased, and the concept of MSP was expanded to include all types of actual and imputed costs. This led to progressively rising MSP, and made it difficult for the public distribution system to make food grains available to poorer farmers at affordable prices. This in turn resulted in a progressive rise in food subsidies. These distortions are aggravated by inefficiencies in the procuring agencies as well as in the public distribution system.

7. Lessons Learned

India's experience in agricultural growth and rural development provides some important lessons. Following are of particular relevance to developing countries:

- It is important to take into account the initial conditions before embarking on major policy changes.
- In large poor countries with democratic government, the state cannot abandon its responsibility of ensuring food security.
- For agricultural development, public investment is the prime mover; private investment can supplement but cannot substitute public investment in rural infrastructure.
- In an agrarian structure dominated by small farms, public sector institutions in research, extension, credit and marketing are crucial.
- Without proper technical support, even the pro-poor institutional reforms (e.g. land reforms) will not yield the desired results.
- Policy makers need to be flexible, taking into account changes in circumstances and adapting accordingly. Policies which are useful in a period of food scarcity may become counter-productive in a period of food surplus and *vice versa*.
- In labour-surplus agriculture, investment in the development of the non-farm rural sector is as important as in the development of agriculture.
- In societies with pronounced social and economic inequalities, organization of the poor at the grassroots level is necessary to reduce transaction costs and safeguard their interests.

ANNEX 5 PROFILE OF MEXICO

1. Setting

Before the Revolution of 1910, large farms, or *haciendas*, characterized the agricultural structure in Mexico. The indigenous population was pushed back and could own only miniscule holdings. The large farms dominating agriculture were basically primary-products, export-oriented agriculture, depending on the labour released from expropriated holdings of the indigenous farmers. Larger farms, like all monopolies, were producing grains inefficiently and at higher relative prices. This constrained the domestic market and was an obstacle to industrialization.

The Mexican Revolution of 1910 encouraged communal land settlements, or *ejido*, but did not affect the large *haciendas*, which continued to account for 94 percent of the agricultural land. The Great Depression of the 1930s ended the hegemony of the large landowners, as the profits from the export of primary products shrank. It was only during the administration of Cardenas (1934-1940) that a fundamental change in agrarian structure took place. The *latifundias* were broken, and the land owned by *ejidos* expanded significantly. The latter also owned a larger share in irrigation. Public institutions provided technical and financial support to the small farms. The state made substantial investments in rural infrastructure, particularly in irrigation. As a result, value added by agricultural sector during the period 1940-1958 rose by an annual rate of 5.8 percent. This was possible because the political system rested on the national organizations of workers and peasants.

However, the import substitution strategy, along with high rate of public investment, brought inefficiencies in the system, and also led to a large fiscal deficit. A high rate of inflation was witnessed, along with price instability and foreign exchange shortages. The currency had to be devalued, and price stabilization became the major objective of the macro policies.

2. The Stabilization Phase (1958-1973)

In the stabilization phase, the main policy thrust was on industrialization, with greater emphasis on private sector. However, the protectionist policies continued and import substitution was further extended. Agricultural price policy was guided by the objective of lower cost of raw materials and wage goods.

The protectionist policies increased profitability of basic grains, leading to a surplus production. Part of the surplus was to be exported with subsidies to the exporters in view of low grain prices in the international markets. Over-valued exchange rates further exacerbated the problems. With higher protection to industry, prices of agricultural products were at a relative disadvantage. Between 1958 and 1982 the agricultural price index, in real terms, dropped from 107 to 73.

The policy was based on the assumption that greater industrial growth would generate a 'pull' effect and stimulate the economy as a whole, including agriculture. The lower prices of agricultural outputs were compensated by subsidizing inputs. A number of public institutions were created to support agriculture, and public investment in irrigation was stepped up. Subsidies for agricultural inputs kept the cost of production low. Credit was not only subsidized, it was 'supervised' by agronomists from the bank. But it entailed high transaction costs.

The agriculture sector was subjected to large public interventions. Due to a serious lack of productive technology, high transaction costs, deficiencies in communication and lack of extension services, policies could not yield desired results. More importantly, the subsidization of

inputs helped only those who could obtain those inputs, i.e. the larger, more entrepreneurial farmers. It amounted to a bias against small farmers and resulted in further concentration of production. Distortions introduced by the subsidies on inputs such as fertilizers, chemicals and irrigation water resulted in over-use of these inputs without contributing to additional production. It also contributed to environmental pollution. The subsidy regime also led to a 'black market' and corruption. Production on small farms was further reduced as the farmers found wage labour more remunerative than growing grains (for example maize).

The government emphasized land distribution measures. But with palpably small land holdings and restrictions on selling and leasing out land, these measures did not help the average *ejidutario*. They further encouraged concealed and illegal tenancy. At the same time subsidy-linked policies impacted adversely the finances of the government.

3. Period of Rapid Foreign Indebtedness (1973-1982)

Limitations of the import substitution model of industrialization soon became apparent. The situation was aggravated with the oil crisis of 1973 and the international recession of 1974-1975. The government responded with accelerated foreign indebtedness. A rise in the interest rates since 1977 further increased the difficulties. The interest on foreign debts grew at an annual rate of 43 percent from 1972 to 1983. By 1982 the debt burden had become excessive and resulted in the foreign debt crisis.

Meanwhile, agricultural prices dropped between 1976 and 1982. The government responded by increasing subsidies to the agricultural sector, thus further straining public finance.

4. Foreign Exchange Crisis (1982-1994)

From 1982 onward there was a sharp turn in economic policies. Public expenditure on agriculture and rural development was drastically reduced. Several public enterprises created in support of agriculture were closed down, as they proved to be a drain on public resources. After being a highly subsidized sector, agriculture faced the challenge of improving productivity and becoming competitive. However, the rural infrastructure was far from adequate.

The transformation of the role of the state in agriculture was not a well thought out process. Institutions were dismantled and policies were changed mainly on the consideration of dwindling, public resources. The share of public expenditure dropped sharply from 12 percent in 1980 to less than 6 percent in 1998. Processes of adjustment were particularly difficult in agriculture after the important role public investment had played in areas such as irrigation, rural electrification, rural roads as well as civic services in the rural areas.

Towards the end of this period, the regulatory framework for communal land was changed. The *ejidatarios* were given property rights to their land, with permission to sell or lease their land or enter into contract. However, development of the markets of *ejidal* land was slow to develop.

Other important changes were in the direction of privatization and sale of some of the state enterprises, e.g. in sugar and tobacco. The old system of guaranteed prices was replaced by a new scheme of cash payments.

5. Agriculture and Rural Development in Recent Years (1974-2006)

The cumulative effect of the earlier policy measures was a drop in the growth of agriculture. The average annual rate of growth during the 15 years ending 2005 was a mediocre 2.1 percent. There was no corresponding decrease in the percentage of people depending on agriculture. Nearly 44 percent of the workforce was dependent on agriculture in the same year. With near-stagnant

agriculture and a large workforce, agricultural labour productivity was hardly 20 percent of the national average. With low per capita income, agriculture could not provide stimulus to growth in non-agricultural sectors. At the same time, within agriculture unemployment and under employment were widespread.

Agriculture's share in gross domestic product (GDP) came down from 7.9 percent in 1990 to 3.7 percent in 2006. Even if agro-processing industries were to be added, it was not more than 9 percent. Part of the decline could be explained by low relative prices of agriculture. In constant prices, the decline in agricultural GDP in the period under reference is not so striking. In constant prices agricultural GDP was 7.9 percent in 1990 and 6.4 percent in 2006. However, terms of trade for agriculture had grossly deteriorated.

The disadvantage in terms of adverse relative prices was compounded by the policies pursued in international trade. International trade in agriculture was rapidly deregulated without giving enough attention to boost competitiveness of domestic agriculture. As a result, imports burgeoned. Mexico had become one of the world's main importing countries for agricultural products. A large part of domestic consumption of agricultural produce had to be met by imports. The food and agricultural trade balance was becoming increasingly negative. In contrast to other Latin American countries, whose export destinations are fairly diversified, Mexico's agricultural exports (to the tune of 88 percent) have a single destination: North America.

The impact of these policies was not restricted to the external trade balance only, but also on the living conditions of a large part of the population, and on natural resources and the environment, which were adversely affected.

To revive agriculture, Mexico has undertaken several programmes, some of which date back to the mid 1990s. On the eve of joining the North American Free Trade Agreement (NAFTA), the country initiated a programme of direct support to agriculture in 1994. The programme, known as PROCAMP, was conceived as a 15-year programme that would provide transitional income support to Mexican agriculture as it underwent structural changes in response to market conditions and phasing out of trade barriers under NAFTA. Payment was made on per-hectare basis. The second important programme was Target Income Programme. For a period of five years the government guaranteed a target income per ton of marketable surplus. The focus on a marketable surplus excluded the country's subsistence farmers, who account for approximately three fourths of Mexico's agricultural producers.

In 1995 another programme, The Alliance for Country, was sponsored as a substitute for the diverse programmes promoted by several institutions for raising agricultural productivity and capital investment. The Social Development Secretariat implemented another direct transfer programme. It required the participation of the beneficiaries in activities for their own development in the areas of education health and nutrition.

These four important programmes aimed to: adapt agriculture to a market-oriented system; assist producers without distorting domestic prices; and minimize the difference between domestic and border prices. They also aimed to overcome the narrow view of agricultural policies, and looked more at rural development in general. Besides these programmes, several other initiatives touching on different aspects of agriculture were taking place simultaneously. Yet there were several important areas which did not receive adequate attention, e.g. natural resource development, rural credit and alternative energy.

The major lacunae, which continued until the end of the reference period, were the complete lack of a long-term agriculture and rural development strategy. In the framework of the structural adjustment programme, it was assumed that a balanced and stable macro economic framework

would encourage private investment and, correspondingly, agricultural growth, as would be the case in different sectors of the economy. The role of the state was considered subsidiary, i.e. in tackling problems which the market could not solve. This vision of a subsidiary state role led to the identification of specific activities and programmes without taking into account the whole policy framework for evolving a long-term development strategy.

This approach also left unattended several key areas, including institutional development, definition of property rights and sustainable use of natural resources, intellectual property rights, specificity of rural labour market, and regulation of different forms of organizations. Mexico's agricultural and rural development policies are no more than the sum of different public expenditure programmes. Therefore, public expenditure policy deserves particular attention.

Public expenditure in relation to GDP is growing briskly. From 1995 to 2006 public sector expenditure increased by an annual rate of 5.7 percent (in constant pesos), above the rate of growth in the economy. In 2006, rural public expenditure represented 10.2 percent of total public expenditure. Starting in 2000 rural public expenditure was growing steadily, recording an annual average rate of growth of 11.4 percent between 2001 and 2005.

Significantly, per capita expenditure level in rural areas increased by 73 percent in constant value. Per capita expenditure in the rural areas in Mexico was the highest among the Latin American countries, with the exception of Uruguay, and it was the highest in relation to agricultural GDP.

However, there was lack of correlation between public expenditure and outcome in terms of increasing production or protecting natural resources, or in poverty reduction. The main explanation lies in the nature of the allocation of public expenditure. The most important item was direct transfer to individual producers, which accounted for 41 percent of total expenditure. Another 16 percent of the expenditure was on productive activities on private farms. Against these, rural infrastructure claimed 17 percent of the expenditure and organizational and institutional developments accounted for 9 percent of the rural expenditure (2002-2007).

The high share of expenditure (nearly 60 percent) on private accounts and the relative neglect of public investment created a vicious circle. Poor incomes of the agricultural producers prompted them to ask for higher public expenditure for their immediate benefits, while the share of expenditure to tackle more difficult structural problems which could have benefited the individual producers, especially the poor farmers, was largely neglected. Without finding solution to the structural problems responsible for rural marginalization, giving more subsidies and support for private income proved to be ineffective and inefficient.

6. Conclusions and Lessons Learned

There has been a marked change in government policy in recent years. In the past, various programmes were directed to achieve efficiency and profitability in the context of inefficient agriculture. Now the emphasis is on direct transfer, with scant attention to developing productive capacity. The policy of income transfer has been supported by the argument of giving compensation to the producers who face competition from the products of the countries that heavily subsidize their agriculture, especially after the country joined NAFTA with North American countries.

The income transfer to individuals or organizations has the danger of deteriorating to a 'spoils' system, especially in an unequal society. Lobbying from the pressure groups can direct the expenditure to privileged individuals. As against private transfers, expenditure on public goods can contribute to the development of production potential and can benefit the individual producers, albeit in the long term.

The serious deficiencies in Mexico's agriculture and rural development policy are not of a technical nature. They represent the political economy that determines the relationship between the government and the private agents and reflects allocation of public resources. To be effective, a strategy has to go beyond expenditure programmes and to the design of a rural development policy reflecting a consensus on the ways of solving the structural problems.

ANNEX 6 PROFILE OF UKRAINE

Ukraine remained a part of Soviet Union for seven decades and was an important contributor to the Soviet economy, particularly agriculture. Ukraine accounted for one fourth of agricultural production in Soviet Union. In the 1980s the Soviet Union started to disintegrate and various constituent units started asserting their autonomy. Ukraine broke away from the Soviet Union in 1991 and declared its independence. The development of agriculture since the 1980s can be studied in three phases: (i) the Soviet Period (1980-1990); (ii) first phase of reforms (1991-1999); and (iii) second phase of reforms (2000-2005).

1. Soviet Period

In the Soviet era, the agricultural sector was divided into three segments: collective farms (*kolkhoz*), state farms (*sovkhozes*) and private plots. The first two types accounted for the bulk of cultivated land. Agricultural policy was decided by Moscow and followed by all constituent units. By the 1980s it was clear that Soviet agriculture was lagging behind in relation to the requirements of the population. In order to boost agricultural production, farm units were linked with related supportive industries and services, and agro-industrial complexes were created. However, these were too unwieldy and soon became dysfunctional.

Throughout the Soviet Union, control over agriculture was exercised by planned targets, government purchase of outputs, and centralized resource allocation. Price policy was dictated by the 'cheap food' objective. With the rising cost of production and low consumer prices, the gap had to be filled by subsidies, which continued to increase. Food subsidies accounted for 15 percent of the Soviet Union's budget (in 1989). According to the Organization for Economic Co-operation and Development (OECD), the average Producer Subsidy Equivalent in 1989-1990 was 72 percent in the Soviet Union. By the middle of the 1980s, with the widening gap between demand and supply, the government's command over agriculture production and prices was undermined and the 'black market' spread rapidly. By the end of the 1980s, procurement of agricultural produce by the government declined substantially and recourse had to be taken to purchase grains from abroad in large quantities.

In some sense Ukraine was the granary of the Soviet Union. Having 7.5 percent of agricultural land of the Soviet Union, Ukraine contributed a quarter of agricultural production. Its agriculture was oriented to crop production. It produced 50-60 percent of the corn, 55 percent of the sugar beet, 45 percent of the sunflower and 25 percent of the wheat in the USSR. Its livestock production was less important than in other republics of the Union.

Although Ukraine accounted for a large production of crops in quantitative terms, productivity per hectare and per worker was low. This was mainly due to low investment in agriculture, as reflected in the very low provision of tractors and harvesters per 100 hectares of arable land.

As with investment, in trade the state also had a monopoly. The entire exportable surplus was delivered to the Union Fund, which also supplied the imported goods. The prices received by the Ukrainian agricultural producers (in local currency) were low. Furthermore, the salary levels in agricultural enterprises were determined by the state and they were low compared to Russia and some other republics. Provision of other facilities, (e.g. housing) was equally unfavourable.

The saving grace during the period was the household plots. The owners of these small plots exerted maximum labour and care and reaped much high production per hectare of land. The share of purchased inputs on these plots was low, hence income from these plots was comparably higher.

2. First Phase of Agricultural Reforms (1991-1999)

During this period significant changes were introduced in land ownership patterns. There were three types of ownership categories: (i) household plots, i.e. parcels of land not exceeding 2 hectares owned by private individuals; (ii) independent private farms and holdings larger than 2 hectares owned by private individuals; and (iii) agricultural enterprises owned by corporate entities. The last category lost its hegemony as the source of investment dried up, and production on these farms declined. As a substantial part of land was in the 'agricultural enterprises', the slowdown in the production on these farms led to a decline in overall production, leading to lower wages for agricultural labour. This resulted in a growing disparity between rural and urban incomes.

During this period the state continued to maintain the 'cheap food' policy but was finding it difficult to maintain stability in the general price level. As a result, inflation remained uncontrolled and the 'black market' thrived.

In the middle of the 1990s, further liberalization measures were adopted. Most of the export quotas and licenses were removed. Attempts were made to unify prices of domestically produced goods with imported ones through appropriate excise duties. Exchange rates of the domestic currency were stabilized. All three measures led to a boost in exports, with a subsequent decline in domestic availability. In response, the policy of export liberalization was halted and protectionist measures were once again introduced. The new import duties for basic food products ensured a high level of protection for domestic production during the period 1997-2000.

3. Second Phase of Agricultural Reforms (2000-2007)

During this period several measures aiming to liberalize the economy were undertaken and the role of state in agricultural sector was weakened. It had both positive and negative implications. The process of land privatization was further accelerated. Individual shareholders in agricultural enterprises were entitled to claim their share of land for private cultivation. On the other hand, large non-agricultural companies were permitted to operate large farms as their subsidiaries. This led to a concentration of land in fewer hands.

The state's role in the purchase of agricultural inputs and sale of agricultural products also weakened. Further measures were initiated in the direction of export and import liberalization, especially for basic foodstuffs, leading to a larger share of imported commodities in the consumers' budget. However, because of the earlier high protection of agricultural commodities, despite measures toward export and import liberalization, the level of protection for agricultural commodities continued to be fairly high.

Along with the liberalization in international trade in agricultural commodities, the state also withdrew from domestic trade in these commodities. The net result was an improvement in terms of trade in favour of agriculture and a positive effect on rural incomes.

In the beginning of this period, a 'mortgage purchases' scheme (a variant of the forward market) was announced, but it was never executed. In 2004 more important measures to influence prices were declared. These included: (i) minimum and maximum prices, with corresponding responsibility of the state to protect and enforce these parameters; and (ii) creation and operation of a buffer fund. A special fund, the Agrarian Fund, was created to implement these schemes. However, due to inefficiencies in management it could not play its role effectively.

Several laws, acts and decrees were passed in this period to give boost to agricultural production and enhance rural development. However, they remained on paper, mainly because of

inefficiencies in implementation and paucity of budgetary support. In fact, many of the social institutions were weakened. The worst hit were the arrangements for human resource development through training/retraining of agricultural professionals.

4. Agricultural Performance during the Two Reform Phases

A substantial drop in the volume of production, a change in commodity structure, a shift in the production of animal products, and structural changes in agriculture characterized this period.

In the first phase of reforms agricultural production dropped significantly; gross agricultural output fell almost by half. As the input prices rose much faster than output prices, this further deteriorated the economic conditions of agricultural producers. Nearly 92 percent of enterprises were unprofitable. It was partially because of the overall decline in Ukraine's economy.

In the second stage of reforms there was some improvement in the overall performance of the country's economy. Also there was some improvement in agricultural production, largely due to the growth of production in household plots. However, the financial condition of agricultural producers did not improve because animal production continued as a loss-incurring activity. In addition, the prices of most crops were highly unstable.

During the first phase of reforms there was a change in the structure of foreign trade in agricultural commodities. Exports increased significantly, while imports were restrained. However, export was mainly in terms of grains. Most of the exports were directed to former Soviet Union countries, primarily Russia.

The second phase of reforms marked not only a significant rise in exports of agricultural products, but the ratio between the exports of raw materials and processed agricultural products became approximately equal. As the transition to a market economy progressed, the destination of agricultural exports also diversified, with an increasing share going to non-CIS countries. The experience of foreign trade led Ukraine to specialize in agricultural exports.

With growth in agricultural production in the second phase of reforms, the country could meet 90 percent of its domestic food demand. However, the content of food intake deteriorated, with less calories being consumed. The consumption of animal products declined and that of cereals increased. There was significant increase in the relative prices of foodstuffs compared to household income. As a result, income spent on food increased from 37 percent in 1990 to nearly 55 percent in 2005. The food security situation deteriorated.

From 1991 onwards, the reorganization of agricultural holdings took place. By 2005, 51 percent of total land had been transferred to private ownership. This reorganization had several important implications: (i) since the owner of the redistributed land (mostly small farmers) did not receive support for productive activities, there was a decline in land productivity; (ii) redistribution resulted in a large number of small farms; (iii) small plots of land could not be used as a collateral for obtaining credit; (iv) as leasing arrangements were permitted, large agricultural enterprises leased land from smallholders and expanded their operational holdings (currently 95 percent of land used by agricultural enterprises comes from leasing arrangements); and (v) along with land, large equipment was also privatized. Some of this equipment became redundant as the large farms were broken up into small privately held holdings.

Among the agricultural enterprises, highest productivity per hectare was achieved by the Joint Stock Companies and the subsidiaries of the non-agricultural enterprises, and lowest productivity per hectare was registered by collectives. The level of per-hectare productivity of individual farmer holdings was the same as that of agricultural enterprises, but the former specialized in less

capital-intensive crop production rather than in animal husbandry, which required higher investment. The small private holdings needed state support to have access to long- and short-term credit. The state also had to support them in obtaining market access and investing in social facilities.

With the advent of reforms, the centralized system of agricultural marketing was broken and a direct relationship between producers and traders came into existence. However, these arrangements were not regulated, and the bulk of transactions did not take place in designated marketplaces. As a result non-transparent marketing channels came into existence to the disadvantage of the producers. The adverse terms of contracts drawn up for producers were reinforced when the traders were also the source of credit and agricultural inputs.

Similarly, inputs and machinery supply systems were privatized. However, in this case the number of suppliers was large and included domestic as well as foreign entities. There was competition among them, and generally the quality of goods improved. The input machinery suppliers also provided extension services when a foreign donor or the government subsidized them. Once that support was withdrawn, they started operating on commercial terms.

Structural reforms in agriculture gave rise to Vertically Integrated Structures and concentration of land, resulting in large farms. Vertically Integrated Structures are legal entities with large private capital. They carry out agricultural production on leased arable land, process the output and sell them to final consumers. They may have official contracts or informal arrangements. Large production units sprang up, taking advantage of unrestricted leasing arrangements. Between 2001 and 2005 the number of enterprises owning more than 10 000 hectares increased by 44 percent (one of them had an area of 115 000 hectares and had plans to increase it to 350 000 hectares).

Such large-scale commercial farming is detrimental from ecological point of view as monoculture is usually practiced and chemicals are heavily used. It is also socially disruptive as it dispenses with the bulk of agricultural labour and substitutes it with heavy mechanization. Large-scale commercial farming is registered in the big cities, and therefore the taxes paid do not benefit the rural areas. This type of farming also wields significant political influence and preempts large resources from the state.

The economic reforms in agriculture led to a sharp increase in unemployment as well as significant changes in the employment structure. The average annual rate of employment *contraction* in agricultural enterprises was 6 percent in the first phase of reforms and increased to 16 percent in the second phase. As for the structure of employment, 57 percent of the rural population worked as hired labour in 2005, almost 42 percent were self-employed, 0.4 percent were employers, and 1.1 percent were working family members who did not receive any wages. The share of qualified and trained persons in agriculture was the lowest, compared to other sectors of the economy, and the facilities for retraining personnel were sharply dwindling. Newly trained personnel were not entering into agriculture.

The amount of public expenditure and fiscal support to agriculture changed over the two phases of economic reforms. In the first phase, public expenditure in agriculture was mostly indirect, mainly in terms of input and output subsidies. In the second phase, public expenditure in agriculture increased substantially and it was more direct, e.g. financial support to animal and crop production, selective breeding programmes for crops and animals, and subsidies for the purchase of modern machinery. Public support to agriculture in Ukraine was much lower than the average for OECD countries. But the support was tilted in favour of large enterprises. The overall effectiveness of the state's spending in and for agriculture was low.

Agriculture benefited from two major fiscal reforms. Agriculture was exempted from the Value Added Tax. A Fixed Agricultural Tax was introduced in 1999, which replaced the number of taxes and surcharges levied earlier. The incidence of Fixed Agricultural Tax was very low; it amounted to 0.15 percent of the value of arable land, and 0.09 percent of the value of permanent crops.

Since the beginning of the first stage of reforms until the mid 1990s, there was an increase in the level of impoverishment of the Ukrainian people. A staggeringly large portion of rural population – 98 percent – had cash in hand below the poverty line. The situation seems to have improved in the second phase of the reforms. However, the increase in per capita income during this period was due more to a substantial increase in pensions rather than an increase in agricultural incomes or agricultural wages. The reform period was also accompanied by deterioration in rural housing and infrastructure, and rural social and cultural amenities.

5. Conclusions

The initial agricultural production conditions at the beginning of the transition to a market-oriented economy were reasonably good. However, since all policy decisions had been made by the Soviet Union, the government was not equipped to take appropriate policy decisions when independence was declared. Consequently, during the first phase of transition, the policies of liberalization and privatization had negative outcomes. It was only in the second phase that the economy began to revive.

Agricultural policies as pursued in the country had depressed agriculture because of the continuation of low food prices and the hegemony of traders and processors. In addition, faulty implementation of land reforms resulted in the concentration of land. Trade liberalization also did not benefit the majority of agricultural producers, as the gains from trade, which were earlier preempted by the central authorities, were now retained by the large agricultural businesses.

As a result of reforms, farmers owning household plots became the main group of agricultural producers. They employed more labour, and the cost of production in these farms was low, despite their being denied concessions and subsidies by the state.

Payments and subsidies by the government were distributed to large-scale enterprises, which used these funds inefficiently. At the same time, withdrawal of funds for human development and rural development led to deterioration in living conditions. The main mistake was that institutional and financial support that is conducive to the transition from a centralized and bureaucratic economy to a market-oriented economy was not provided.

6. Lessons Learned

The experience of Ukraine in implementing economic reforms along the lines implied in Washington Consensus has suggested several lessons that need to be underlined.

- In the first phase these reforms, at best, addressed the narrow objective of economic growth in the country, but did not address the question of quality of life or sustainable use of natural resources. On these counts the reforms did more harm than good; they deepened the impoverishment of much of the rural population.
- The creation of strong supportive institutions influences public welfare more positively than rapid liberalization and privatization.
- Simple adoption of practices, institutions or laws from developed countries is not sufficient: it requires developing institutions in accordance with the national socio-political context is of primary importance.

-
- Governments should pay more attention to creating enabling conditions for the development of small and medium farms, ensuring adherence to quality, ensuring contract enforcement, maintaining essential infrastructure, preventing negative externalities, and taking positive steps to eradicate poverty.
 - The issue of sustainability needs to be watched carefully: because of their political clout, large enterprises may introduce cropping patterns or agricultural practices that may be environmentally harmful or adversely affect the interests of the small producers.

ANNEX 7 PROFILE OF ZAMBIA

Since independence, economic policies in Zambia have shifted from administrative control to reliance on the market. The review indicates that both controls and wholesale liberalization have failed to induce agricultural growth. Even with economic reforms, although the rate of growth in the gross domestic product (GDP) has improved, there has only been an insubstantial decline in poverty.

The initial policy thrust towards socialistic economic management was a common policy stance by several newly independent countries in Africa. In the case of Zambia, huge mineral revenues supported this stance. When these revenues declined, it became difficult to manage the economy. The country adopted wholesale liberalization, but that did not produce the desired results, mainly because of a weak regulatory framework, uncertainty induced by reforms, inconsistencies in several policies and weak institutional support in terms of credit and marketing.

1. Agriculture in Zambia

Zambia has great potential to expand agriculture. It has a vast endowment of land, labour and water. However, these endowments are under-utilized. The country can be divided into three agro climatic zones. Zone I is the smallest zone, with harsh climate and low rainfall; Zone II is the second largest zone and has high potential for agricultural development; Zone III covers the largest part of the country and has degraded land, but there is a large untapped land area suitable for agriculture. There are vast opportunities for development of water resources and for expansion of irrigation. If these resources are tapped, the country can be self-sufficient in wheat and rice and can increase production of high-value crops.

Smallholders, who strive to be self-provisioning and have little marketable surplus, dominate the sector. Nearly 20 percent of farmers are medium scale holders who are quite enterprising. At the top are large-scale commercial farmers, accounting for 1 percent of the holdings, but having control over large areas.

The cropping pattern is still dominated by maize. Although the area under maize is declining, part of it is diverted to grow cash crops while a substantial area is devoted to traditional crops. The latter received a boost once the subsidy on maize was withdrawn. These crops do not need many purchased inputs, and their markets have expanded domestically and through cross-border trade. High-value crops did not receive the desired boost because of inadequate skills of the farmers, long distances to key markets and difficulties in obtaining long-term credit.

Farmers' dependence on markets is predicated on a number of factors: favourable climate leading to high production; internal markets for agricultural produce; access to markets; and access to information on output prices.

The sections that follow examine the linkages and mechanism through which changes in the role of the public sector may have influenced agricultural performance. The discussion on changes in policies and institutions is attempted for four distinct periods.

2. Evolution of Development Policies and Institutions

Colonial Period (1920-1964): Several aspects of Zambia's economic performance can be traced to the performance of its copper resources. In the colonial period Zambia emerged as an important mining (copper) economy. Development of the mining industry led to rapid

urbanization on the one hand and an organized labour movement on the other. Agriculture was promoted only among a few settler farmers, while small indigenous farmers were lured to work in the mines. Development of the social sectors was also neglected.

Period of High Resources from Minerals (1965-1974): In the years following independence in 1964, the Government of the Republic of Zambia tried to rectify the imbalance in the economy (over-dependence on mining) by emphasizing manufacturing and services. These sectors attracted higher investment and increased their share in GDP and employment. Agriculture continued to be neglected, and rural-urban disparities widened. The country was still largely dependent on the revenue from copper mining, which made it largely susceptible to external shocks. This was compounded by an import substitution strategy for manufacturing, which was more dependent on imported inputs. Agriculture also suffered because of low produce prices to appease organized labour and the urban population. During this period, agriculture's terms of trade worsened.

Institutional reforms, such as providing marketing services through the National Agricultural Marketing Board (NAMB), did not benefit producers due to low food prices that limited the profit margins, and politicization of appointment in the civil services and in public-sector enterprises. Government expenditure, mainly financed by the mineral sector, expanded remarkably, and was over-committed.

The Economic Crisis and Policy Response (1975-1990): This period was characterized by a sharp fall in copper prices. The country's terms of trade deteriorated. The current account moved from a positive to negative balance. The GDP growth declined from 6.5 percent in 1974 to 2.3 percent in 1975.

The government and foreign institutions thought that the fall would be a temporary phenomenon, but their optimism proved to be misguided. It was difficult to sustain the high rate of public spending that begun during the more prosperous years. The government's reaction was to cut expenditure on development activities, and resort to deficit financing. This gave rise to high inflationary pressure. The government's response was to broaden the coverage of price controls, which, however, did not prove to be effective. Shortages mounted, and black market flourished. There was a fall in the real exchange rates, and real interest rates rose sharply. With these developments, capital flight took place using significant over-invoicing of exports and under-invoicing of imports. The period 1975-1981 was characterized as a period of increasing administrative controls, but without much success to record.

Given the difficult financial situation, the country had to sign a series of International Monetary Fund (IMF) loans. In the initial years the IMF had stringent and wide-ranging conditionality. The World Bank also took a complementary stand, insisting, among other conditions, on exchange rate realignment and fiscal reforms. But these reforms resulted in deepening social and macro-economic instability. In the face of popular unrest, the government terminated its relationship with the IMF and the World Bank, and introduced the New Economic Reforms Programme (NERP), which was basically a return to administrative controls.

NERP could not tackle the problems. At the behest of the Paris Club, conditional measures similar to those of the IMF had to be reintroduced. Donors were also keen that an IMF-type programme be implemented, and made it a precondition for providing aid. Some softening of the earlier conditionality was allowed – for example, instead of removing the food subsidy altogether it was made more targeted. But it could not stop food riots and increased political uncertainty. Again, the donor community came to the rescue. The World Bank and IMF made accommodation, while the USA provided bridge financing to enable Zambia to pay World Bank arrears.

The IMF designed a programme to re-establish the country's "right" once it started implementing the programme.

The Road to Economic Stability (1992-2005): Radical and more consistently applied repressors characterized this period. Fundamental changes were made in economic policies. Privatization was aggressively pursued; loss-inducing public enterprises were sold or privatized. Strict fiscal discipline was imposed. Exchange rates were freed and capital controls were relaxed.

In the initial years of this phase the country could not gain much either in terms of GDP growth, poverty reduction or price stability. These difficulties were compounded by low prices and low output of copper. The situation started improving in the first five years of this century. This was helped by the country acquiring "Heavily Indebted Poor Country" status and, as a result, reduced debt service. It also coincided with a significant rise in copper prices and a jump in production. The rise in direct foreign investment and increase in non-traditional exports combined to ensure a consistently high rate of growth and, to some extent, subdued inflation.

3. Evolution of Agricultural Policies

In the colonial period, the government paid particular attention to the provinces accessible by railways, and to large estate farmers within these provinces. After independence, attempts were made to redress the imbalance between these provinces and the less accessible ones. A uniform price policy for maize, the principal food grain, applicable to all areas was introduced. At the institutional level the NAMB was established, which took over the responsibility of domestic and international trade. Another initiative was to establish cooperatives at the village level and to form an umbrella organization of the cooperatives at the national level.

These organizational innovations came to naught with the adoption of the 'cheap food' policy for the urban population. With high prices for maize offered to all farmers, irrespective of their location, and cheap food for urban population, it was inevitable to give subsidies to the national marketing agencies. This legacy of maize marketing subsidies continued and became unmanageable. With the economic crisis of the mid 1970s, the system virtually collapsed.

From the beginning of the 1980s, the government embarked on liberal reforms in the agricultural sector. This meant progressive withdrawal of food subsidies, privatization of agricultural marketing and privatization or closure of public-sector agro-processing units. While pursuing these reforms, the government was not keen on liberalizing the marketing and pricing of maize. The mounting subsidies on maize, both at the producer and consumer level, coincided with the economic downturn and declining revenues, which led to deficit financing and a consequent rise in inflation.

In the second phase of liberalization, starting in 1992 the government made a radical shift in favour of liberal and market-led policies for the agricultural sector. The other important development was the emergence of contract farming, especially in cotton; in more accessible areas, contract farming covered other crops.

Despite thorough privatization, government intervention was still required in severe drought years as well as in years of bumper harvest.

4. Causes and Consequences of Low Agricultural Performance

Several factors were responsible for the tardy performance of agriculture. The most important were: i) the collapse of key marketing and rural finance institutions; ii) the decline in farm gate

prices in remote areas; iii) the decline in soil fertility due to inappropriate farming practices; iv) inadequate investment; and v) the devastating effects of HIV and AIDS.

Agriculture's lukewarm performance had three serious consequences. Firstly, it led to food insecurity and malnutrition for large populations. Secondly, it led to heavy imports and a serious drain on foreign exchange or heavy dependence on food aid. Thirdly, no serious dent could be made in the existing high levels of poverty.

One of the biggest constraints to agricultural development in Zambia had been the inadequate access to credit. Partly it was due to the fact that rural credit was linked too much to maize production, while other crops and activities were starved for credit. At the beginning of the reform process in the 1990s, three major institutions existed for providing rural credit. All of these institutions had abysmally low recovery rates. From 1994-1997 the government sought to provide credit through private institutions. They too failed to fill the void in any significant way.

The most affected were smallholders and emerging medium-size commercial farmers. The large exporters had no difficulty in procuring credit from commercial banks. In recent years the government, with the help of international donor agencies such as the International Fund for Agricultural Development, has tried to disburse credit through the parties sponsoring contract farming. The paucity of long-term credit still remains an unresolved problem.

5. The Role of the Public and Private Sectors in Agriculture

With macro-economic reforms and privatization of state-owned agro-processing firms, it was expected that the private sector would fill the void created by the collapse of the key agricultural support institution, NAMB. These hopes have only been partially fulfilled. Neither in output marketing nor in input supplies could the private sector meet expectations. The only mechanism which has succeeded to some extent is contract farming. There too, with sharp fluctuations in prices, problems are created by the growers or by the contracting firms.

Privatization is likely to receive a further boost with the government's launching of the Private Sector Development Plan with support from several donor agencies. It is a comprehensive plan encompassing improving the macro-economic environment and regulatory framework; developing infrastructure; removing administrative hurdles; creating opportunities for access to regional and international markets; and encouraging support to local initiatives among small and medium enterprises.

The reasons for the slow development of the private sector are many. The most significant are the high cost of doing business in Zambia, the poor state of rural infrastructure, the country's landlocked status, inefficiently run railways, and costly air freight. In addition, the country's inability to meet sanitary and phytosanitary requirements creates major problems in exports. High interest rates and inadequate access to long-term credit are the other hurdles. Despite these hurdles, the private sector is making progress, especially in international trade.

Despite its great potential, agriculture has under-performed in Zambia in most years. Part of the explanations lies in its neglect from a funding point of view. From the beginning of the reforms in the mid 1970s until the beginning of this decade, the budgetary allocation to agriculture was paltry, averaging only 3 percent of total public expenditure. Furthermore, only 50 percent of what had been allocated was actually released.

The situation seems to have changed, with allocation for agriculture reaching a share of 13.7 percent in 2006, and marked improvement in actual spending. However, a closer look at the expenditure suggests that bulk of funds (59 to 71 percent) was spent on the two

subsidy-driven public sector programmes, i.e. Fertilizer Support and Strategic Food Reserve. Meanwhile, agricultural support services, such as extension and research, have continued to be starved for funds.

The government's preoccupation with support to maize prices and marketing gives a conflicting signal to the private sector. Added to this is the enduring suspicion of the private sector not only by some government sectors, but also by the large body of small farmers. The government seems to be overwhelmed by non-core public-sector functions (for example, marketing), which the private sector could take up, while its principal functions of policy formulation and regulatory services remain neglected.

6. The Role of Donors

Given Zambia's high dependence on foreign aid, the donors' approach has mattered a lot for Zambia's agricultural policies. Soon after the introduction of reforms, donors tried to consolidate fragmented agricultural development programmes under the Agricultural Sector Investment Programme (ASIP), which was implemented between 1996 and 2000. Unfortunately, ASIP did not succeed in achieving its objectives. The main reason given was the failure of the macro-economic stabilization programme, which created an unfavourable environment for its implementation.

ASIP was followed by the Agricultural Commercialization Programme, which, like other more recent donor-supported programmes, placed emphasis on reorienting small producers to adopt a business approach to farming and bring them into the mainstream of development. Programme support was focused mainly on agricultural products that had considerable market potential.

Apart from agricultural support programmes, during the latter part of the reform period (from the mid 1990s onwards), donors have been placing emphasis on the development of infrastructure. Priority is given to building trunk roads and rehabilitating the core road network. Emphasis is also being given to developing air transportation, providing support to railway lines, and rehabilitating the inland port of Mpulanger. The main objective is to strengthen the domestic transportation network and integrate it with the regional network.

7. Lessons Learned

A number of lessons have emerged from the Zambia case study. These include that:

- a small land-locked country should put trade in general and agricultural trade in particular at the centre of the development agenda;
- a country should maintain and build upon recent achievements in macro-economic stability;
- with an increase in government revenues from sudden commodity price hikes, as happened recently with copper prices, governments should not revert to policies and programmes pursued during price booms as in pre-1975 Zambia;
- maize subsidies can hinder agricultural diversification, undermining support to traditional food grains and the high-value crops;
- roles between the public and private sectors in service provision need to be clear, in order to prevent policy inconsistency and sending the wrong signals about government intentions;
- achieving food security based on sustainable agricultural growth requires institutional restructuring that emphasizes enhanced service delivery at district and sub-district levels; and
- agricultural budgeting should ensure sufficient resources for extension, research and other rural services.

POLICY ASSISTANCE SERIES

- FAO (2006/04).** Rapid Growth of Selected Asian Economies – Lessons and Implications for Agriculture and Food Security. Synthesis Report. **1/1** FAO RAP. FAO Regional Office for Asia and the Pacific, Bangkok (Thailand).
- FAO (2006/05).** Rapid Growth of Selected Asian Economies – Lessons and Implications for Agriculture and Food Security. China and India. **1/2** FAO RAP. FAO Regional Office for Asia and the Pacific, Bangkok (Thailand).
- FAO (2006/06).** Rapid Growth of Selected Asian Economies – Lessons and Implications for Agriculture and Food Security. Republic of Korea, Thailand and Viet Nam. **1/3** FAO RAP. FAO Regional Office for Asia and the Pacific, Bangkok (Thailand).
- FAO (2006).** Food Security and Agricultural Development in Sub-Saharan Africa by Kidane, Weldeghaber; Maetz, Materne; and Dardel, Philippe (*also available in French*). **2** FAO RAF. FAO Subregional Office for Southern and Eastern Africa, Harare (Zimbabwe).
- FAO (2007).** Expansión futura de la soja 2005-2014. Implicaciones para la seguridad alimentaria, el desarrollo rural sostenible y las políticas agrícolas en los países del Mercosur y Bolivia. Documento de síntesis. (*also available in English*). **3** FAO RLC. Oficina Regional de la FAO para América Latina y el Caribe, Santiago de Chile (Chile).
- FAO (2008).** Influencing Policy Processes: Lessons from Experience by Maetz, Materne; and Balié, Jean. (*also available in French*). **4** FAO HQ, Rome (Italy).
- FAO (2009).** Enhancing Food Security and Nutrition Policy Assistance by Balié, Jean. **5** FAO HQ, Rome (Italy).
- FAO (2009).** Agricultural Reforms and Trade Liberalization in China and Selected Asian Countries: Lessons of Three Decades. **6** FAO RAP. FAO Regional Office for Asia and the Pacific, Bangkok (Thailand).



The slow progress towards attaining the Millennium Development Goal of halving the number of the hungry by 2015 especially in low income food deficit countries, and the global food crises of 2007 and 2008 that arose from escalation of food prices in the global markets, pose a great challenge to policy practitioners in defining a stronger role of the public sector in supporting agriculture development vis-à-vis the minimalist role advocated by proponents of the New Conventional Wisdom.

In this report FAO establishes, based on contemporary and historical precedents, the need for developing countries to adopt policies that ensure strong complementarity between targeted public-sector interventions and private sector roles. The report provides a wide range of examples and highlights three important lessons. First, in all the now developed countries, governments, at the early stages of economic development, supported agriculture through, inter alia, price stabilization and provision of inputs such as seeds and fertilizer. The same strategy was successfully employed recently by countries such as Chile and India.

Second, the wide array and mix of policy options adopted by countries clearly underlines the importance of taking a pragmatic and flexible approach rather than getting locked into pro-state or pro-private-sector ideological viewpoints.

Finally, agriculture thrives best when there is continuity in policy and public-sector support. In food insecure countries, state subventions are often justifiable to ensure price stability, food availability and affordability and, ultimately, political stability which are required for long-term investment and development.

ISBN 978-92-5-106437-5

ISSN 1819-4591



9 789251 064375

I1217E/1/10.09/1050